

# Work Order ID 56376

March 3, 2010 2:38:00 PM



Page 1

Item ID: D350-689-021

Accept



Setup Start



Revision ID:

Item Name: Dual High Back Seat, LH

Stop



Start Date: 2/22/10 Start Qty: 1.00



Cust Item ID:

Required Date: 3/01/10 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

DSI 9419

A

DSI 9498

A

100



DC

Document Control

DOCUMENT CONTROL

0.00

Memo

0.00

Photocopy bluefile and create labels per PPP D350-689-021 CHG002

*8/10/09*

110



Packaging

Packaging

Pick Kit

0.00

Memo

0.00

PULL FROM STOCK:

1 X D350-689-021 B-~~56376~~ 43511

*EL 10-3-9*

<b>DART</b> Dart Aerospace Ltd. 1270 ABERDEEN ST. HAWKESBURY, ON, CANADA K6A 1K7		TC APPROVAL # 09-89 TEL: 1-613-632-5200	
P/N	D350-689-011	CHG	CHG002
DESC.	Dual High Back Seat	STC	SH02-33
LOT	B43511	STC	SR01620NY
MODEL	AS 350/355	STC	
MADE IN CANADA		D2729-1	



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Page 2

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Process Plan:

Date:

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Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

111



Large Fab

Large Fab

Memo

0.00

0.00

MODIFY D3017-041 BACK FRAME.  
D3017-5 TUBE TO BE MADE FROM M4130N-T750W083 B 113818  
PER ECN 10-504 DSI9498

EL 10-3-4

112



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

8/06/04

Memo

0.00

PL  
AL3

(+)

Pls →

113



Small Fab

Small Fab

Memo

0.00

0.00

RE-ASSEMBLE PER DRWG DSI9498

8/10/03/08 (4)

113.1

QC5 inspect work to current step → 8/06/08

(+)





Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
10/03/04	# 112.1	Powder coat grey per Q52005 M1F2589 Start time 7:00am Temp 320°F Finish time 7:30am	gel	10/03/05	1 Assembly		S 10/03/04	
10/03/04	112.3	QC inspect Powder coat.	EB	10/03/08			S 10/03/04	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
		Scat was made / Fractured Total worn - using size of hole was 0.15 2x 1/4" holes instead of 0.191" H/A						
		9.00D3021-011 was made of						

NOTE: Date & initial all entries



**Work Order ID 56376**

March 3, 2010 2:38:01 PM



Page 3

Item ID: D350-689-021

Accept



Setup Start



Revision ID:

Item Name: Dual High Back Seat, LH

Stop



Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00



Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

114



Powdercoat

Powder Coating

M112588

START: 7:00am

Temp 320°F

Memo

FIN 7:30am

RE-POWDER COAT IF APPLICABLE

0.00

= 7.24

10103/08

0.00

1 Assembly

✓

115



QC

Quality Control

QC3- Inspect Part Finish

Memo

0.00

0.00

116



Small Fab

Small Fab

Memo

RE-ASSEMBLE PER DRWG DSI9498

0.00

0.00

9510/03/08 @

9510/03/08 @

P10 →

1872



Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
10/03/04	# 117	inspect QCS → S 10/03/04	S	10/03/04	(+10)		S 10/03/04	
	118	Pick Kit	10/3/11 S				S 10/03/04	

Part No: D350-689-021 PAR #: \_\_\_\_\_ Fault Category: Small Fbb NCR: Yes No DQA: \_\_\_\_\_ Date: 003.15  
 Resolution: re-work Disposition: re-work QA: N/C Closed: \_\_\_\_\_ Date: 10/03/30

NCR: <u>56376</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10.03.09	116	MS27039-4-21 TOO LONG @ CENTER LOCATION. QTY. = 4 R.C.: ① HOLES DRILLED FOR		COMPLETE ASSEMBLY USING MS27039-4-21 BY ADDING QTY. 2 NAS1149D0463J WASHERS M113706	S 10/03/09			
		- 4 INSTEAD OF 3 SCREWS. ② - 4 SCREW LENGTHS IN STOCK ARE EITHER TOO LONG OR TOO SHORT.	10.03.09 FOR QSI092	PER SCREWS AS FOLLOWS: ONE NAS1149D0463J UNDER HEAD OF SCREW + ONE NAS1149D0463J UNDER NUT. FOR LOCATIONS INDICATED ON DSI 9495 REV. A ATTACHED TO THIS W/O FOR REFERENCE.	S 10/03/09			S 10/03/08
		R.C.: Lack of Attention.			S 10/03/09			

NOTE: Date & initial all entries





**Work Order ID 56376**

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Page 4

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Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

120



QC

Quality Control

QC4- 100% Inspect kits for completeness

0.00

8.10.10/11

Memo

0.00

130



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPP D350-689-021 CHG002  
USING NEW B/N  
ADD DSI 9498 TO PAPERWORK  
Location: \_\_\_\_\_  
PPP Rev: \_\_\_\_\_

C/L 10/31/10

Ren B 10-3-11SL

140



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

10/03/11

h 10/03/11





# Picklist Print

March 3, 2010 2:37:58 PM

Page 1

Work Order ID: 56376

Parent Item: D350-689-021

Parent Item Name: Dual High Back Seat, LH

Comments: IPP Rev:A 08-12-23 new issue DD verified by: LL 08.12.24 IPP  
Rev:B chg002 DD 10.02.12 verified by:JLM

Start Date: 2/22/10

Required Date: 3/01/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3017-11		Manufactured	No				Each	41.0000	0.0000			
											EL 10-3-4	

cap

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
ST	41	
44779	12	
52583	29	

D3031-1



Loop

Manufactured No

Each 17.0000 2.0000



N/A already on seat

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
ST034	17	
43395	17	

D350-689-021



Manufactured No

Each 0.0000 1.0000



Dual High Back Seat, LH

D3808-041



Manufactured No

Each 9.0000 2.0000



Seat Rail Assembly

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
ST	9	
41238	1	
44695	8	

356376 2/20/03/08

2/20/03/08

2



# Picklist Print

March 3, 2010 2:37:58 PM

Page 2

Work Order ID: 56376

Parent Item: D350-689-021

Parent Item Name: Dual High Back Seat, LH

Comments: IPP Rev:A 08-12-23 new issue DD verified by: LL 08.12.24 IPP  
Rev:B chg002 DD 10.02.12 verified by:JLM

Start Date: 2/22/10

Required Date: 3/01/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

D3809-1

Manufactured

No

Each

20.0000

4.0000

Sliding Block



450/03/08

M4130NT0.750W.083

Purchased

No

20

20

f

16.5800

-1.0000

4130 RD Tube .750 x.083W



2 10-3-4

MS20600-AD4W2

Purchased

No

16.58

16.58

Each

410.0000

0.0000

Rivet



2.5 450/03/08

Shop Packet Print

Page 2







# Picklist Print

Page 3

March 3, 2010 2:37:59 PM

Work Order ID: 56376



Parent Item: D350-689-021



Parent Item Name: Dual High Back Seat, LH

Start Date: 2/22/10

Required Date: 3/01/10

Comments: IPP Rev:A 08-12-23 new issue DD verified by: LL 08.12.24 IPP  
Rev:B chg002 DD 10.02.12 verified by:JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS20600-AD4W3		Purchased	No				Each	2,329.000	0.0000			



Cherry Rivets



*GS 10/03/08*

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
ST	2329	
102929	37	
104715	10	
106375	314	
107939	1000	
111636	968	

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
*6*  
\_\_\_\_\_  
\_\_\_\_\_

March 3, 2010 2:37:59 PM

Shop Packet Print

Page 3





# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D350-689 REV. A  
AND FLIGHT MANUAL SUPPLEMENT FMS-D350-689 REV. A  
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D350-689 REV. 0  
REF. CANADIAN STC: SH02-33  
REF. FAA STC: SR01620NY

## PURPOSE

The purpose of this DSI is to add the D350-689-021 Dual High Back Seat Installation, LH, the D350-689-023 Floor Provisions Kit and the D350-689-043 Dual High Back Seat Assembly to IIN-D350-689 Rev. A. The D350-689-021/-023 Kits are compatible with the Energy Attenuating Seat rails in later AS 350/355 model aircraft.

The DSI 9419-011 Kit includes the parts that are required to convert a D350-689-011 installation into a D350-689-021 installation.

## PART LIST

-011	-021	-023	-043	P/N	DESCRIPTION
X				DSI 9419-011	ENERGY ATTENUATING CONVERSION KIT
	X			D350-689-021	DUAL HIGH BACK SEAT INSTALLATION, LH
	1	X		D350-689-023	ENERGY ATTENUATING FLOOR PROVISIONS KIT
	1		X	D350-689-043	DUAL HIGH BACK SEAT ASSEMBLY
			2	D3016-041	SEAT FRAME ASSEMBLY
			1	D3017-041	BACK FRAME ASSEMBLY
	1			D3018-1	SEAT CUSHION
	1			D3019-1	BACK CUSHION
			1	D3021-041	TUBE ASSEMBLY
			1	D3022-1	SEAT PAN
			1	D3023-1	BACK PANEL
			3	D3024-1	SPACER
		1		D3025-1	BEAM
		1		D3026-1	CHANNEL
		1		D3027-1	CLIP
		1		D3027-3	CLIP
		1		D3027-5	CLIP
		4		D3027-7	CLIP
			2	D3031-1	LOOP
1		1		D3234-1	DOUBLER
1		1		D3234-3	DOUBLER
2			2	D3808-041	SEAT RAIL ASSEMBLY
4			4	D3809-1	SLIDING BLOCK
1		1		D3811-041	SEAT TRACK ASSEMBLY

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY:   
D. SHEPHERD (DE # 02)

DATE: Aug. 19/2008  
CERT. NO.: SH02-33  
ISSUE NO.: 1

A	NEW ISSUE	RF	08.08.19
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<del>RF</del>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9419	SHEET 1 OF 5
APPROVED	<del>RF</del>	TITLE	SCALE
DE APPR.	<del>RF</del>	ENERGY ATTENUATING PROVISION KIT	NTS
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-011	-021	-023	-043	P/N	DESCRIPTION
			3	AN3-12A	BOLT
14		14		MS20426AD4-5	RIVET
34		34		MS20470AD4-5	RIVET
18		18		MS20470AD4-6	RIVET
		32		MS20470AD5-6	RIVET
			40	MS20600AD4W2	RIVET
			6	MS20600AD4W3	RIVET
9		9	23	MS21042L3	NUT (or MS21042-3)
			4	MS24693-S272	SCREW
8			8	MS24694-S3	SCREW
9		9		MS24694-S50	SCREW
4			4	MS24694-S148	SCREW
			4	MS27039-1-17	SCREW
			12	MS27039-1-19	SCREW
			23	NAS1149D0332J	WASHER (or AN960JD10L)
9		9		NAS1149D0363J	WASHER (or AN960JD10)

### PROCEDURE

1. Install the under floor structure as outlined in steps 1-18 of IIN-D350-689 Rev. A and DSI 9311 Rev. A as applicable, except do not install D3032-1 Spacers. Attach D3026-1 Channel to floor using (14) MS20426AD4 rivets. Ensure D3234-1/-3 Doublers are installed per DSI 9269 Rev. A.
2. Position the D3811-041 Seat Track Assy at LBL 27.33 as shown in Figure 1 to be in-line with the existing seat rails at LBL 8.98 and LBL 19.16.
3. Transfer the attachment holes from D3811-041 Seat Track Assy to aircraft floor (9 pls) using a  $\phi 0.201$  (#7 drill). Deburr holes. Install D3811-041 using (9) MS24694-S50 screws, (9) NAS1149D0363J washers, and (9) MS21042L3 nuts as shown in Figure 1. Torque screws to 20 to 25 in-lbs (2.3 to 2.8 Nm).
4. If converting a -041 Seat Assembly to a -043 Seat Assembly, remove D3028-1 Studs, D3029-1 Springs, and D3030-1 Locks from the D350-689-041 Seat Assembly. Install (2) D3808-041 Seat Rails Assemblies as shown in Figure 1 Detail A using (4) MS24694-S148 Screws. Torque screws to 100 to 140 in-lbs (11.3 to 15.8 Nm). Install D3809-1 Sliding Blocks using (2) MS24694-S3 screws as shown in Figure 1 Detail A. Torque screws to 12 to 15 in-lbs (1.4 to 1.7 Nm).
5. Remove screws from back end of Seat Tracks at LBL 27.33 and LBL 8.98. Slide D350-689-043 Seat Assembly into both seat tracks and lock in desired position using D3810-1 Retractable Spring Plungers. Re-install screws on back of seat tracks per the Aircraft Maintenance Manual.

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

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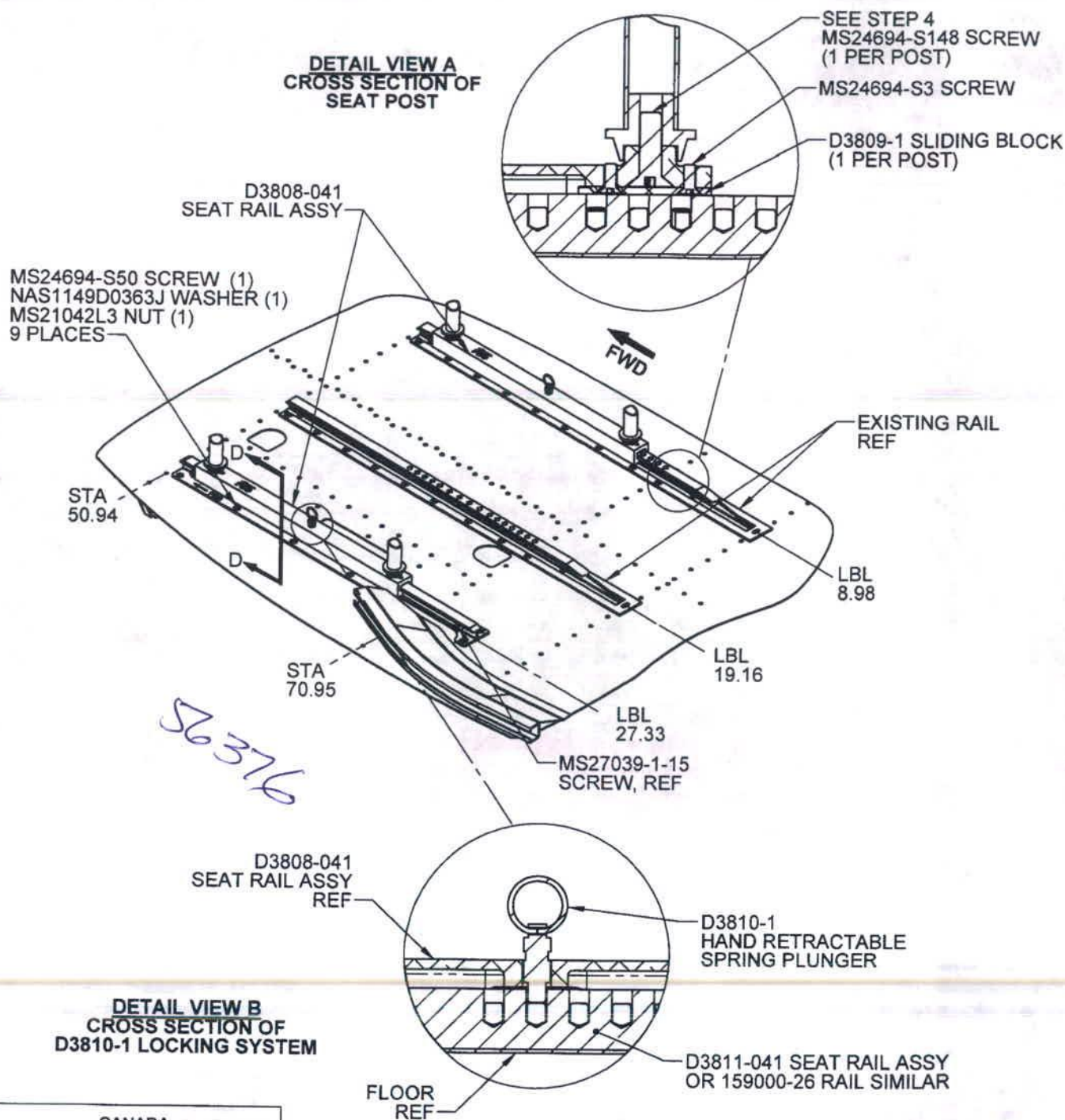
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D. SHEPHERD (DE # 02)

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MFG. APPR.	N/A	<b>DSI 9419</b>	SHEET 2 OF 5
APPROVED	<del>RF</del>	TITLE	SCALE
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**FIGURE 1 D350-689-021 INSTALLATION**

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AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

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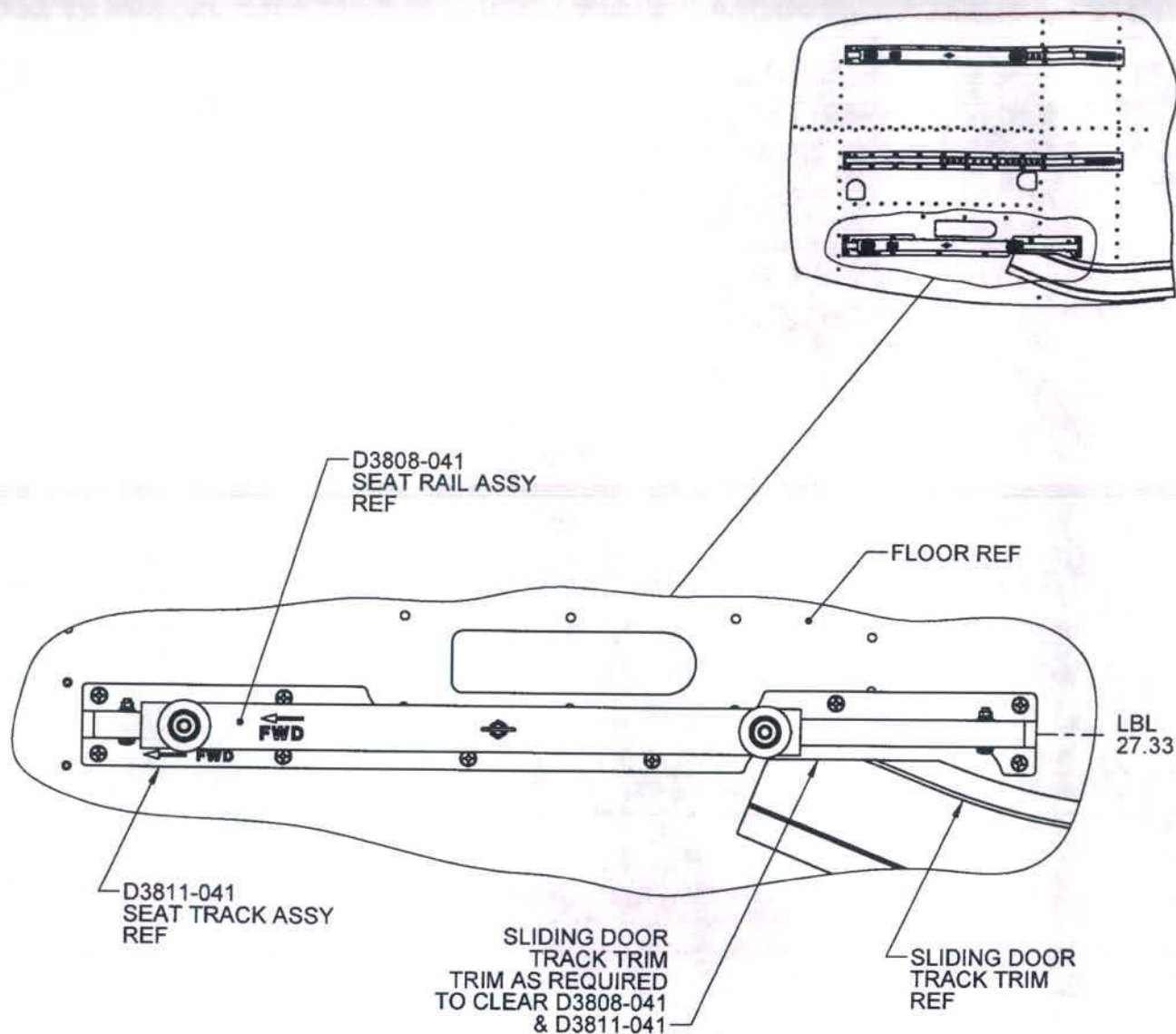
BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: Aug. 19/2008  
CERT. NO.: SH02-33  
ISSUE NO.: 1

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MFG. APPR.	N/A	DSI 9419	SHEET 3 OF 5
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DETAIL VIEW C  
SLIDING DOOR TRACK TRIM

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

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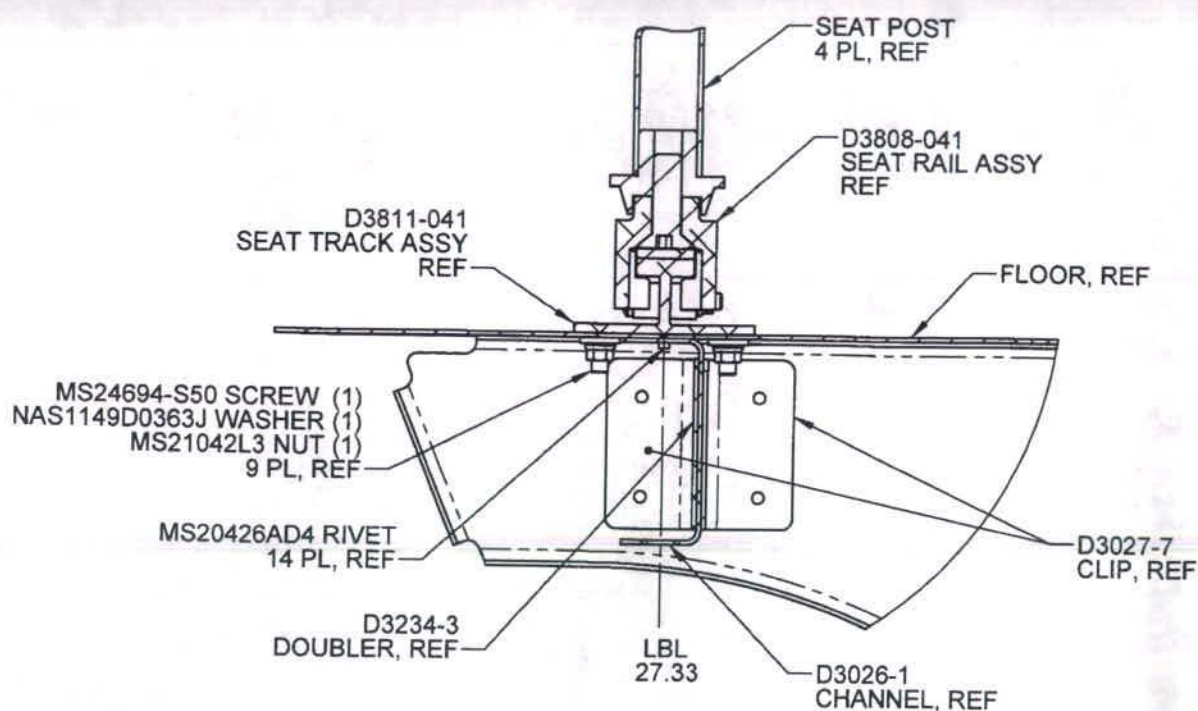
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MFG. APPR.	N/A	DSI 9419	SHEET 4 OF 5
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**CROSS SECTION D-D**

## WEIGHT AND BALANCE

The following is the net weight increase associated with the Kits.

Installation	Weight	LATERAL		LONGITUDINAL	
		Arm	Moment	Arm	Moment
DSI 9419-011 Energy Attenuating Conversion Kit	1.1 lb 0.50 kg	-18.2 in -0.46 m	-20 in-lb -0.2 m-kg	60.7 in 1.54 m	67 in-lb 0.77 m-kg
D350-689-021 Dual High Back Seat Installation, LH Fwd Position	28.6 lb 13.0 kg	-18.2 in -0.46 m	-521 in-lb -6.0 m-kg	60.7 in 1.54 m	1736 in-lb 20.0 m-kg
D350-689-021 Dual High Back Seat Installation, LH Aft Position	28.6 lb 13.0 kg	-18.2 in -0.46 m	-521 in-lb -6.0 m-kg	64.7 in 1.64 m	1850 in-lb 21.3 m-kg
D350-689-023 Energy Attenuating Floor Provisions Kit	2.5 lb 1.1 kg	-18.2 in -0.46 m	-46 in-lb -0.5 m-kg	62.2 in 1.58 m	156 in-lb 1.7 m-kg

## REVISED LOADING CHART

With respect to the Loading Chart in FMS-D350-689, when the Dual High Back Seat has been installed in an aircraft with Energy Attenuating Seat rails per this DSI, the occupants are located at STA 61.02 when the seat is in the Fwd position and at STA 65.02 when the seat is in the Aft position.

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: Aug. 19/2008  
CERT. NO.: SH02-33  
ISSUE NO.: 1

DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<del>RF</del>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9419	SHEET 5 OF 5
APPROVED	<del>RF</del>	TITLE	SCALE
DE APPR.	<del>RF</del>	ENERGY ATTENUATING PROVISION KIT	NTS
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**L Lacelle**

---

**From:** Melanie Fauteux [mfauteux@dartaero.com]

**Sent:** May 14, 2009 10:56 AM

**To:** 'Lucie Lamoureux'

**Cc:** 'L Lacelle'

**Subject:** RE: LEAD TIME

We do not have a kit of D350-689-021 however the customer can order the following:  
The DSI 9419-011 KIT includes the parts that are required to convert a D350-689-011 installation into a D350-689-021 installation

Thank you,  
Melanie Fauteux  
Production Coordinator  
Dart Aerospace Ltd  
phone: 613-632-5552  
fax : 613-632-1053

---

**From:** Lucie Lamoureux [mailto:lucie@darths.com]

**Sent:** May 14, 2009 9:47 AM

**To:** L Lacelle

**Cc:** Melanie Fauteux ; Heather Mahon

**Subject:** LEAD TIME

*Hello Linda,*

*Can we ship today if we get a PO today for the following:*

*QTY (1) ONE      D350-689-021      Dual High back seat*

*Thanks*

*Lucie*

**Lucie Gaumond-Lamoureux**

Sales Associate

**DART Helicopter Services, LLC**

Tel: 1.613.632.3336

Tol: 1.800.556.4166

Fax: 1.613.632.4443

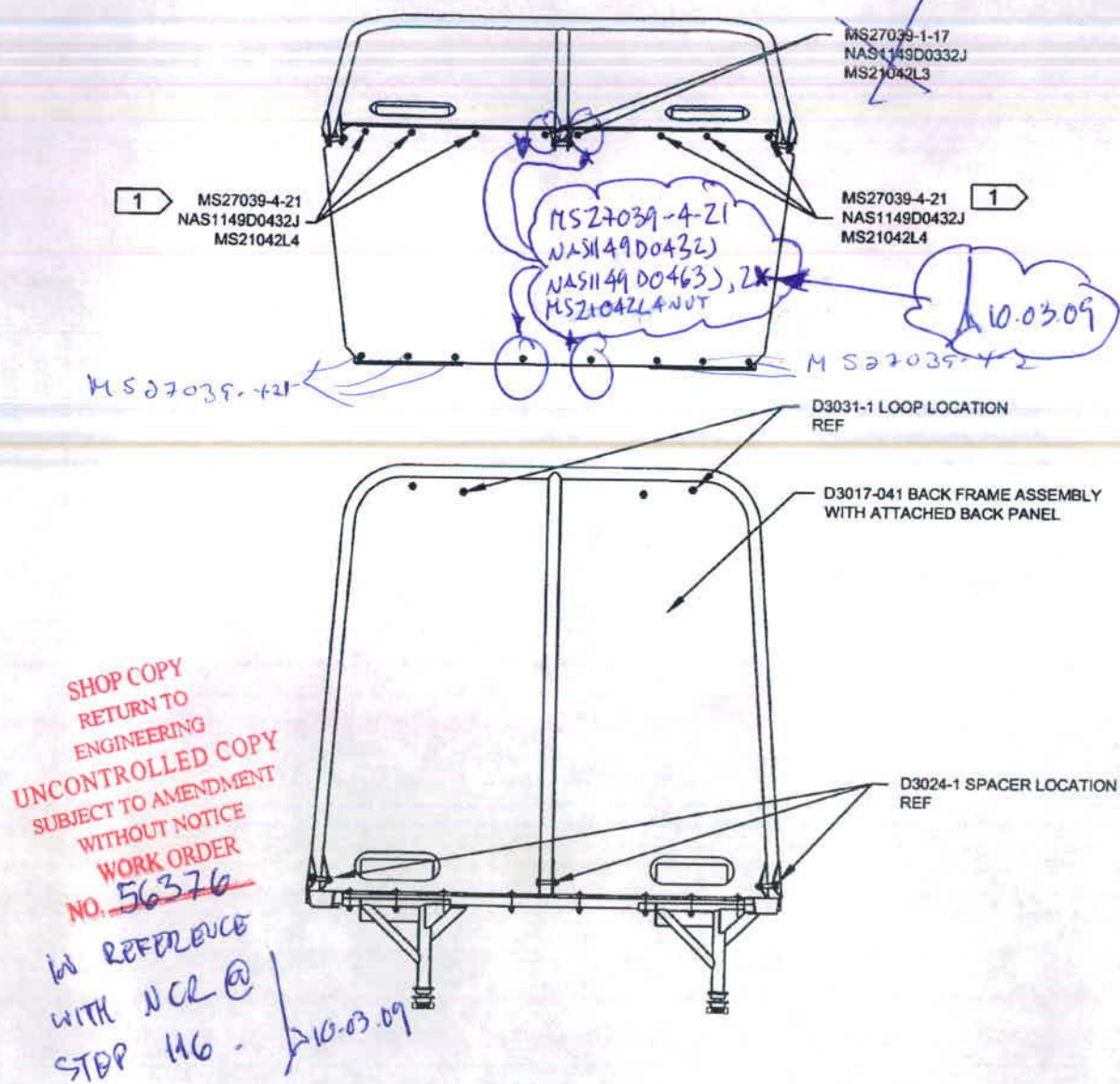
Cell: 1.613.676.1720

[lucie@darths.com](mailto:lucie@darths.com)

2/25/10







**FIGURE 1**  
**DUAL HIGH BACK SEAT ASSEMBLY WITH**  
**DSI9495-011**

1 OPEN EXISTING HOLES IN SEAT FRAME ASSEMBLY TO Ø0.257"

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED  
BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: 10.01.13  
CERT. NO.: SH02-33  
ISSUE NO.: 1

DESIGN	<i>[Signature]</i>	<b>DART AEROSPACE LTD</b>	
DRAWN	<i>[Signature]</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9495	SHEET 2 OF 2
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	INSTL OF REINFORCED BACK FRAME	NTS
DATE	10.01.13	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





# Work Order ID 56376

February 22, 2010 10:03:04 AM



Page 1

Item ID: D350-689-021

Accept



Setup Start



Revision ID:

Stop



Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00



Required Date: 3/01/10 Req'd Qty: 1.00



Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: *W*

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

DSI 9419

A

DSI 9498

A

100



DOCUMENT CONTROL

0.00

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels per PPP D350-689-021 CHG002

*Pl 10-2-25*

110



Pick Kit

0.00

Packaging

Memo

0.00

Packaging

PULL FROM STOCK:

*43511*

1 X D350-689-021 B

*44405* CHG001

*EL 10-2-23*

**DART**

Dart Aerospace Ltd.  
1370 ABERDEEN ST.  
HAWKESBURY, ON, CANADA K6A 1K7

TC APPROVAL # 09-89

TEL: 1-613-632-5200

P/N	D350-689-021	CHG	CHG001
DESC.	Dual High Back Seat, LH	STC	SH02-33
LDT	B44405	STC	SR01620NY
MODEL	AS 350/355	STC	

MADE IN CANADA

D2729-1





# Work Order ID 56376

February 22, 2010 10:03:04 AM



Page 2

Item ID: D350-689-021

Revision ID:

Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Accept



Setup Start



Stop



Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

111



Large Fab

Large Fab

Memo

MODIFY D3017-041 BACK FRAME.  
D3017-5 TUBE TO BE MADE FROM M4130N-T750W083 B ~~12~~ M 100075  
PER ECN 10-504 DS19498

0.00

0.00

EL 10-2-23

112



QC

Quality Control

\* QC5- Inspect part completeness to step on W/O

0.00

→ 81062/23

Memo

0.00

QC9 inspect weld.  
81062/23

→ BE 10/02/23

113



Small Fab

Small Fab

Memo

RE-ASSEMBLE IF APPLICABLE

0.00

0.00

Pro →

9510/02/24 @





Dart Aerospace Ltd

W/O: 56376

WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
	112.1	the Powder coat all Parts grey sandex per Q52005					
	112.2	Start time 2:45pm Fin time 3:15pm Temp. 320°F → Qc3 inspect Powder coat. M112588	BR	10/04/23	(X1)		S 10/04/23
	113.1	Qc5 inspect reassembly.	S	10-02-23	Q.		S 10/02/23
				10/02/24	Q		S 10/02/23

Part No: D350-689-021 PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

WORK ORDER NON-CONFORMANCE (NCR)

NCR:								
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



# Work Order ID 56376

February 22, 2010 10:03:05 AM



Page 3

Item ID: D350-689-021

Revision ID:

Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Accept



Setup Start



Stop



Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

114



Powdercoat

Powder Coating

M112588

0.00

Memo

RE-POWDER COAT IF APPLICABLE

0.00

start time

8:30AM

Fin time

3:20P

Temp

9:00AM

all 10/02/24 (X1) 5

115



QC

Quality Control

QC3- Inspect Part Finish

0.00

Memo

0.00

BR 10-02-24

5

120



QC

Quality Control

QC4- 100% Inspect kits for completeness

0.00

↳ ensure original parts are correctly at workstation check.

Memo

0.00

002

5/02/25

PTO →





Dart Aerospace Ltd

W/O: 56376

# WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
	# 116	→ Assemble Part to Finish Duty.	EB	10/10/15	10		
	117	→ QCS inspect Finish Part	S	10/12/15	10		S 10/12/15
	118	Pick Kit.	P	10/2/15			S 10/12/15

Part No: D350-689-021

PAR #:

Fault Category:

NCR: Yes No

DQA:

Date:

Resolution:

Disposition:

QA: N/C Closed:

Date:

NCR:

## WORK ORDER NON-CONFORMANCE (NCR)

DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries





**Work Order ID 56376**

February 22, 2010 10:03:05 AM



Page 4

Item ID: D350-689-021

Accept

Revision ID:

Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130



Packaging

Packaging

Packaging

Memo

0.00

Identify and pack for shipping as per PPP D350-689-021 CHG002  
USING NEW B/N  
ADD DSI 9498 TO PAPERWORK 4 DSI 9445  
Location: \_\_\_\_\_  
PPP Rev: \_\_\_\_\_

140



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

11/10/25 (C)

10/02/25 (J)

ME  
10-2-25



# Picklist Print

February 22, 2010 10:03:03 AM

Page 1

Work Order ID: 56376

Parent Item: D350-689-021

Parent Item Name: Dual High Back Seat, LH

Comments: IPP Rev:A 08-12-23 new issue DD verified by: LL 08.12.24 IPP  
Rev:B chg002 DD 10.02.12 verified by:JLM

Start Date: 2/22/10

Required Date: 3/01/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D350-689-021		Manufactured	No				Each	1.0000	1.0000			



Dual High Back Seat, LH

EL 10-2-23

M4130NT0.750W.083

Purchased

No



4130 RD Tube .750 x.083W

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
FG	1	
44165	1	
	f	23.8300



EL 10-2-23

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
MAT	23.83	
113812	23.83	

2.5'

cap. D3017-11

MS20600AD4W2

MS20600AD4W3

~~MS20600AD4W3~~

52583 x 2  
M111359 (40x)  
M106375 (6x)

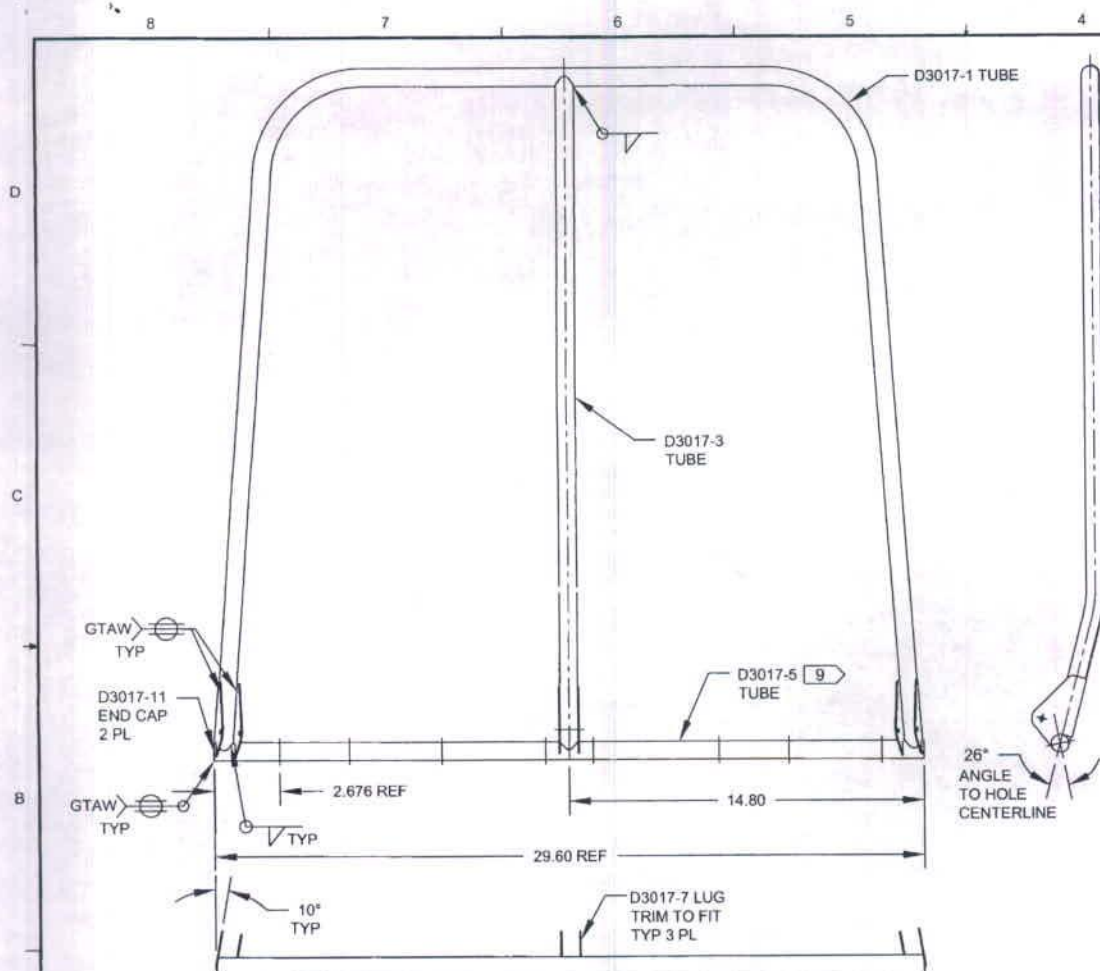
EL 10-2-23

ES10/02/24  
ES10/02/24

→



MS27039-4-21 #M114055 (C) 10/02/05  
 MS210424 #M11827 (C) 10/02/05  
 #MS1149104325 #M112550 (C) 10/02/05



ITEM No.	QTY	PART NUMBER	DESCRIPTION
1	X	D3017-041	BACK FRAME ASSEMBLY
2	1	D3017-1	TUBE
3	1	D3017-3	TUBE
4	1	D3017-5	TUBE
5	3	D3017-7	LUG
6	2	D3017-11	END CAP

- NOTES:**
- 1) MATERIAL: N/A
  - 2) FINISH: POWDER COAT GREY SANDTEX (4.3.5.6) PER DART QSI 005 4.3
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3017-041" USING FINE POINT PERMANENT INK MARKER
  - 7) WEIGHT: 4.50 lbs
  - 8) WELD PER DART QSI 004
  - 9) ROTATE SO THAT PILOT HOLES ARE ANGLED AS SHOWN IN END VIEW.

# **D3017-041 BACK FRAME ASSEMBLY**

*who 56376*

**RELEASED**  
2010-02-02  
*wp*

B	REFORMAT DWG, -5 TUBE WALL THKNS REVD (A8-3) SHEET 3 & 4 ADDED TO CLARIFY DRAWING. RADIUS CHANGED FROM R4.00 TO R3.75 (B4-2, B2-2). HOLE SIZE CHANGED FROM Ø0.191 TO Ø0.257 (C6-3, C3-3)	JPH	10.01.13
A	NEW ISSUE	CP	01.05.18
REV	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG APPR.			
APPROVED			
DE APPR.			
DATE	10.01.13		

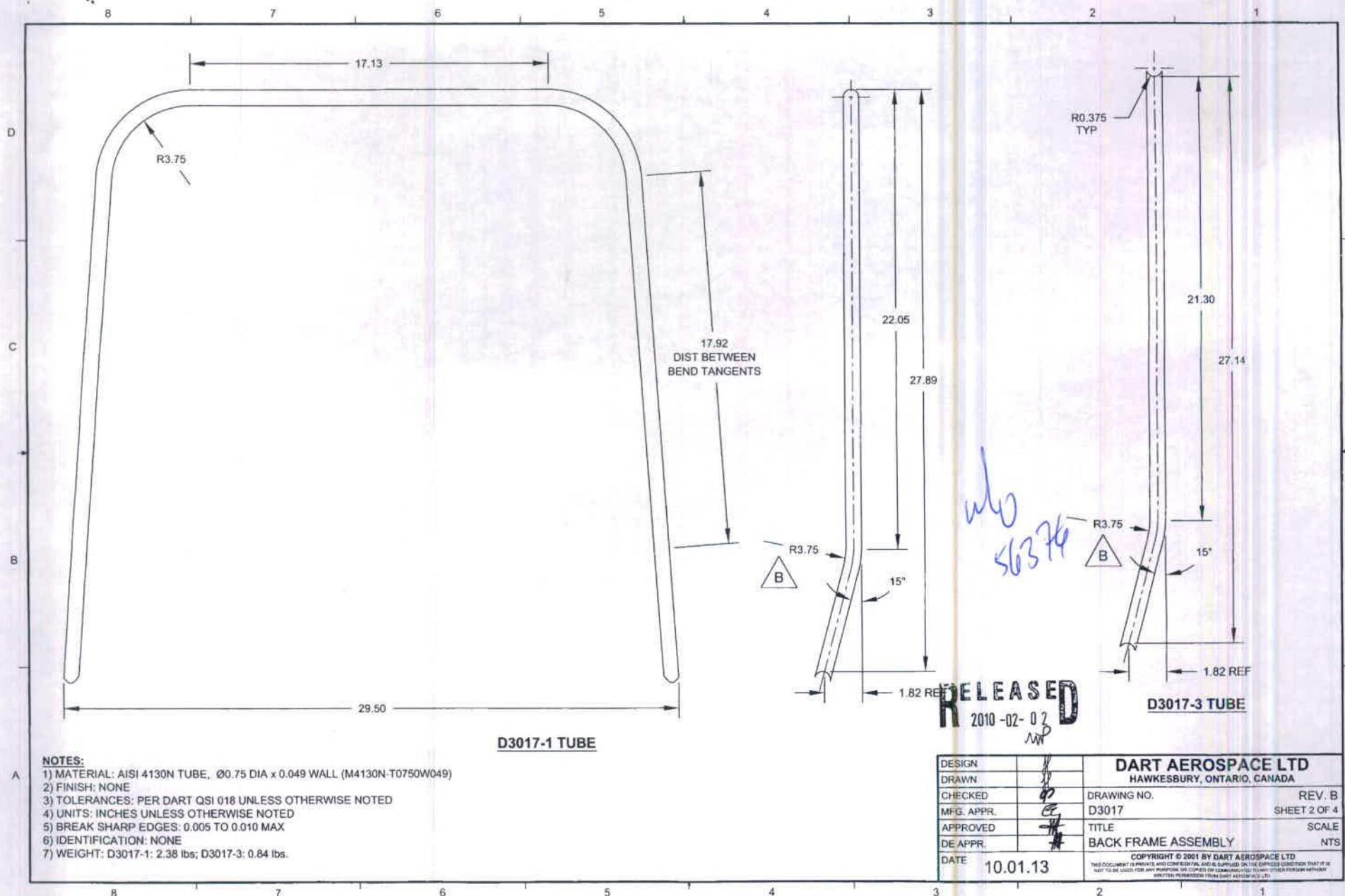
**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. B  
D3017 SHEET 1 OF 4  
TITLE SCALE  
BACK FRAME ASSEMBLY NTS

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WARRANTY FROM DART AEROSPACE LTD







**NOTES:**

- 1) MATERIAL: AISI 4130N TUBE, Ø0.75 DIA x 0.049 WALL (M4130N-T0750W049)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D3017-1: 2.38 lbs; D3017-3: 0.84 lbs.

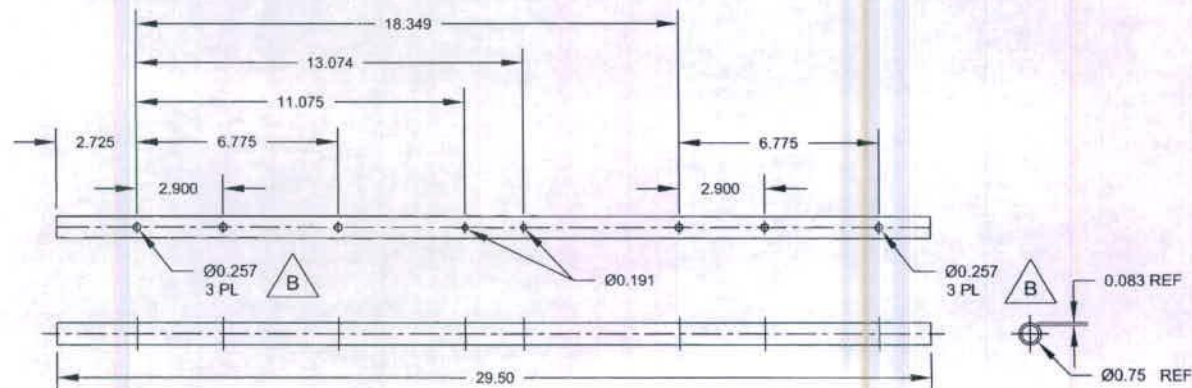
**D3017-1 TUBE**

**D3017-3 TUBE**

**RELEASED**  
2010-02-03

DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D3017	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NTS
DATE	10.01.13	COPYRIGHT © 2001 BY DART AEROSPACE LTD	





D3017-5 TUBE

*u/s 56376*

**RELEASED**  
2010-02-02  
*MP*

**NOTES:**

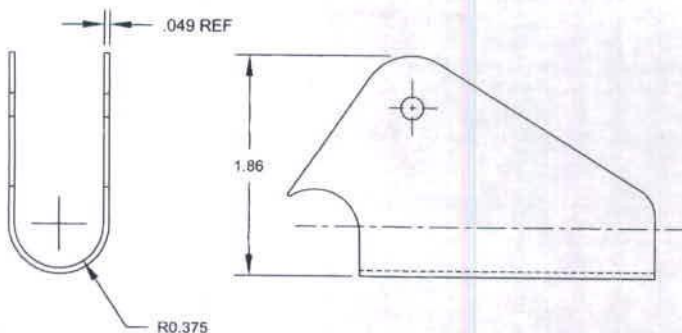
- 1) MATERIAL: AISI 4130N TUBE,  $\varnothing 0.75$  DIA x 0.083 WALL (M4130N-T0750W083)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.89 lbs



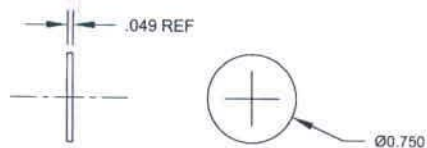
DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D3017	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NTS
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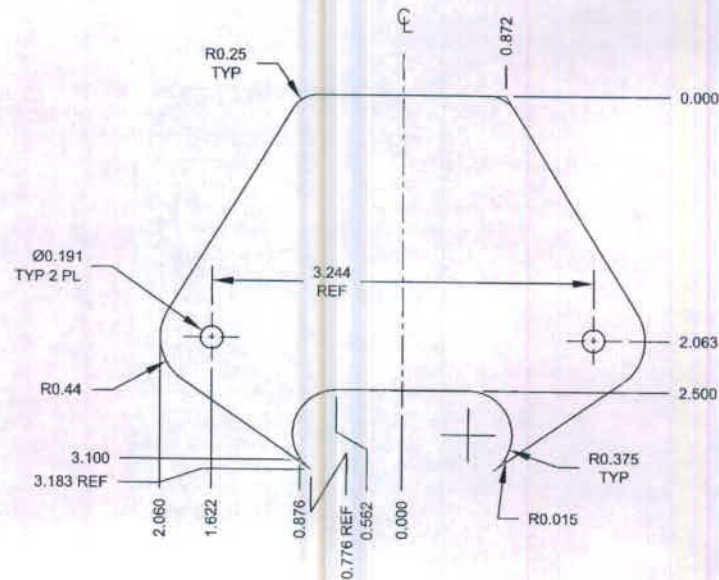




**D3017-7 LUG**  
BENDING DETAIL  
MAKE FROM D3017-7F



**D3017-11 END CAP**



**D3017-7F FLAT PATTERN**  
PART IS SYMMETRIC  
ABOUT CENTERLINE

*dw 56376*

**RELEASED**  
2010-02-02

- NOTES:**
- 1) MATERIAL: AISI 4130N SHEET, 18 GAUGE (M4130N-S049)
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: -7: 0.12 lbs; -11: 0.01 lbs.

DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		<b>HAWKESBURY, ONTARIO, CANADA</b>	
CHECKED		DRAWING NO	REV. B
MFG. APPR.		D3017	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NT
DATE	10.01.13	COPYRIGHT © 2001 BY DART AEROSPACE LTD	
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# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D350-689 REV. A  
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D350-689 REV 0

REF TCCA STC: SH02-33

REF FAA STC: SR01620NY

REF EASA STC: EASA.IM.R.S.01453

REF BRAZILIAN STC: 2005S03-09

## PURPOSE:

TO UPDATE THE PARTS LIST AND THE WEIGHT AND BALANCE TABLE IN IIN-D350-689 REV A AND ICA-D350-689 REV 0.

## CHANGE:

FOR D350-689-011 AT CHANGE 003, D350-689-021 AT CHANGE 002, D350-689-041 AT CHANGE 002 AND D350-689-043 AT CHANGE 002, QTY (6) OF: MS27039-1-19 SCREW; MS21042L3 NUT & AN960JD10L WASHER REPLACED WITH QTY (6) OF: MS27039-4-21 SCREW; MS21042L4 NUT & NAS1149D0432J WASHER RESPECTIVELY. FIGURE 6 (PG 9) OF IIN-D350-689 MODIFIED PER SHT 2 OF THIS SERVICE INSTRUCTION. THE HARDWARE SECTION OF THE PARTS LIST IN SECTION 5 (PG 10) OF IIN-D350-689 REV A & SECTION 25.6 (PG 31) OF ICA-350-689 REV 0 IS AMENDED AS FOLLOWS:

Qty -011	Qty -013	Qty -021	Qty -023	Qty -041	Qty -043	Part Number	Description
X						D350-689-011	DUAL HIGH BACK SEAT INSTALLATION, LH
1	X					D350-689-013	FLOOR PROVISIONS KIT
		X				D350-689-021	DUAL HIGH BACK SEAT INSTALLATION, LH (REF DSI 9419)
		1	X			D350-689-023	ENERGY ATTENUATING FLOOR PROVISION KIT (REF DSI 9419)
1				X		D350-689-041	DUAL HIGH BACK SEAT ASSEMBLY
		1			X	D350-689-043	DUAL HIGH BACK SEAT ASSEMBLY (REF DSI 9419)
	6			17	17	NAS1149D0332J	WASHER (OR AN960JD10L)
			9			NAS1149D0363J	WASHER (OR AN960JD10)
				6	6	NAS1149D0432J	WASHER (OR AN960JD416)
				3	3	AN3-12A	BOLT
16						MS20426AD3-6	RIVET
		14				MS20426AD4-5	RIVET
17						MS20426AD4-6	RIVET
18		34				MS20470AD4-5	RIVET
2		18				MS20470AD4-6	RIVET
30		32				MS20470AD5-6	RIVET
				40	40	MS20600AD4W2	RIVET
				6	6	MS20600AD4W3	RIVET (REF DSI 9349)
8						MS21058L3	NUTPLATE
6						MS27039-1-10	SCREW
				4	4	MS27039-1-17	SCREW
				6	6	MS27039-1-19	SCREW
				6	6	MS27039-4-21	SCREW
				4	4	MS24693-S272	SCREW
2						MS24693-S273	SCREW
				8		MS24694-S3	SCREW
		9				MS24694-S50	SCREW
				4		MS24694-S148	SCREW
		9	17	17		MS21042L3	NUT (OR MS21042-3)
			6	6		MS21042L4	NUT (OR MS21042-4)

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: 10.01.21  
CERT. NO.: SH02-33  
ISSUE NO.: 1

A	NEW ISSUE.	JPH	10.01.21
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>[Signature]</i>	<b>DART AEROSPACE LTD</b>	
DRAWN	<i>[Signature]</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9498	SHEET 1 OF 2
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	SEAT REINF; IIN & ICA UPDATE	NTS
DATE	10.01.21	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D350-689 REV. A  
AND FLIGHT MANUAL SUPPLEMENT FMS-D350-689 REV. A  
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D350-689 REV. 0  
REF. CANADIAN STC: SH02-33  
REF. FAA STC: SR01620NY

## PURPOSE

The purpose of this DSI is to add the D350-689-021 Dual High Back Seat Installation, LH, the D350-689-023 Floor Provisions Kit and the D350-689-043 Dual High Back Seat Assembly to IIN-D350-689 Rev. A. The D350-689-021/-023 Kits are compatible with the Energy Attenuating Seat rails in later AS 350/355 model aircraft.

The DSI 9419-011 Kit includes the parts that are required to convert a D350-689-011 installation into a D350-689-021 installation.

## PART LIST

-011	-021	-023	-043	P/N	DESCRIPTION
X				DSI 9419-011	ENERGY ATTENUATING CONVERSION KIT
	X			D350-689-021	DUAL HIGH BACK SEAT INSTALLATION, LH
	1	X		D350-689-023	ENERGY ATTENUATING FLOOR PROVISIONS KIT
	1		X	D350-689-043	DUAL HIGH BACK SEAT ASSEMBLY
			2	D3016-041	SEAT FRAME ASSEMBLY
			1	D3017-041	BACK FRAME ASSEMBLY
	1			D3018-1	SEAT CUSHION
	1			D3019-1	BACK CUSHION
			1	D3021-041	TUBE ASSEMBLY
			1	D3022-1	SEAT PAN
			1	D3023-1	BACK PANEL
			3	D3024-1	SPACER
		1		D3025-1	BEAM
		1		D3026-1	CHANNEL
		1		D3027-1	CLIP
		1		D3027-3	CLIP
		1		D3027-5	CLIP
	1	4		D3027-7	CLIP
			2	D3031-1	LOOP
1		1		D3234-1	DOUBLER
1		1		D3234-3	DOUBLER
2			2	D3808-041	SEAT RAIL ASSEMBLY
4			4	D3809-1	SLIDING BLOCK
1		1		D3811-041	SEAT TRACK ASSEMBLY

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY:   
D. SHEPHERD (DE # 02)

DATE: Aug. 19/2008  
CERT. NO.: SH02-33  
ISSUE NO.: 1

A	NEW ISSUE	RF	08.08.19
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	N/A	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9419	SHEET 1 OF 5
APPROVED	N/A	TITLE	SCALE
DE APPR.	N/A	ENERGY ATTENUATING PROVISION KIT	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

-011	-021	-023	-043	P/N	DESCRIPTION
			3	AN3-12A	BOLT
14		14		MS20426AD4-5	RIVET
34		34		MS20470AD4-5	RIVET
18		18		MS20470AD4-6	RIVET
		32		MS20470AD5-6	RIVET
			40	MS20600AD4W2	RIVET
			6	MS20600AD4W3	RIVET
9		9	23	MS21042L3	NUT (or MS21042-3)
			4	MS24693-S272	SCREW
8			8	MS24694-S3	SCREW
9		9		MS24694-S50	SCREW
4			4	MS24694-S148	SCREW
			4	MS27039-1-17	SCREW
			12	MS27039-1-19	SCREW
			23	NAS1149D0332J	WASHER (or AN960JD10L)
9		9		NAS1149D0363J	WASHER (or AN960JD10)

# PROCEDURE

1. Install the under floor structure as outlined in steps 1-18 of IIN-D350-689 Rev. A and DSI 9311 Rev. A as applicable, except do not install D3032-1 Spacers. Attach D3026-1 Channel to floor using (14) MS20426AD4 rivets. Ensure D3234-1/-3 Doublers are installed per DSI 9269 Rev. A.
2. Position the D3811-041 Seat Track Assy at LBL 27.33 as shown in Figure 1 to be in-line with the existing seat rails at LBL 8.98 and LBL 19.16.
3. Transfer the attachment holes from D3811-041 Seat Track Assy to aircraft floor (9 pls) using a  $\varnothing 0.201$  (#7 drill). Deburr holes. Install D3811-041 using (9) MS24694-S50 screws, (9) NAS1149D0363J washers, and (9) MS21042L3 nuts as shown in Figure 1. Torque screws to 20 to 25 in-lbs (2.3 to 2.8 Nm).
4. If converting a -041 Seat Assembly to a -043 Seat Assembly, remove D3028-1 Studs, D3029-1 Springs, and D3030-1 Locks from the D350-689-041 Seat Assembly. Install (2) D3808-041 Seat Rails Assemblies as shown in Figure 1 Detail A using (4) MS24694-S148 Screws. Torque screws to 100 to 140 in-lbs (11.3 to 15.8 Nm). Install D3809-1 Sliding Blocks using (2) MS24694-S3 screws as shown in Figure 1 Detail A. Torque screws to 12 to 15 in-lbs (1.4 to 1.7 Nm).
5. Remove screws from back end of Seat Tracks at LBL 27.33 and LBL 8.98. Slide D350-689-043 Seat Assembly into both seat tracks and lock in desired position using D3810-1 Retractable Spring Plungers. Re-install screws on back of seat tracks per the Aircraft Maintenance Manual.

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY:   
D. SHEPHERD (DE # 02)

DATE: Aug. 19/2008  
CERT. NO.: SH02-33  
ISSUE NO.: 1

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.	N/A	<b>DSI 9419</b>	SHEET 2 OF 5
APPROVED		TITLE	SCALE
DE APPR.		<b>ENERGY ATTENUATING PROVISION KIT</b>	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

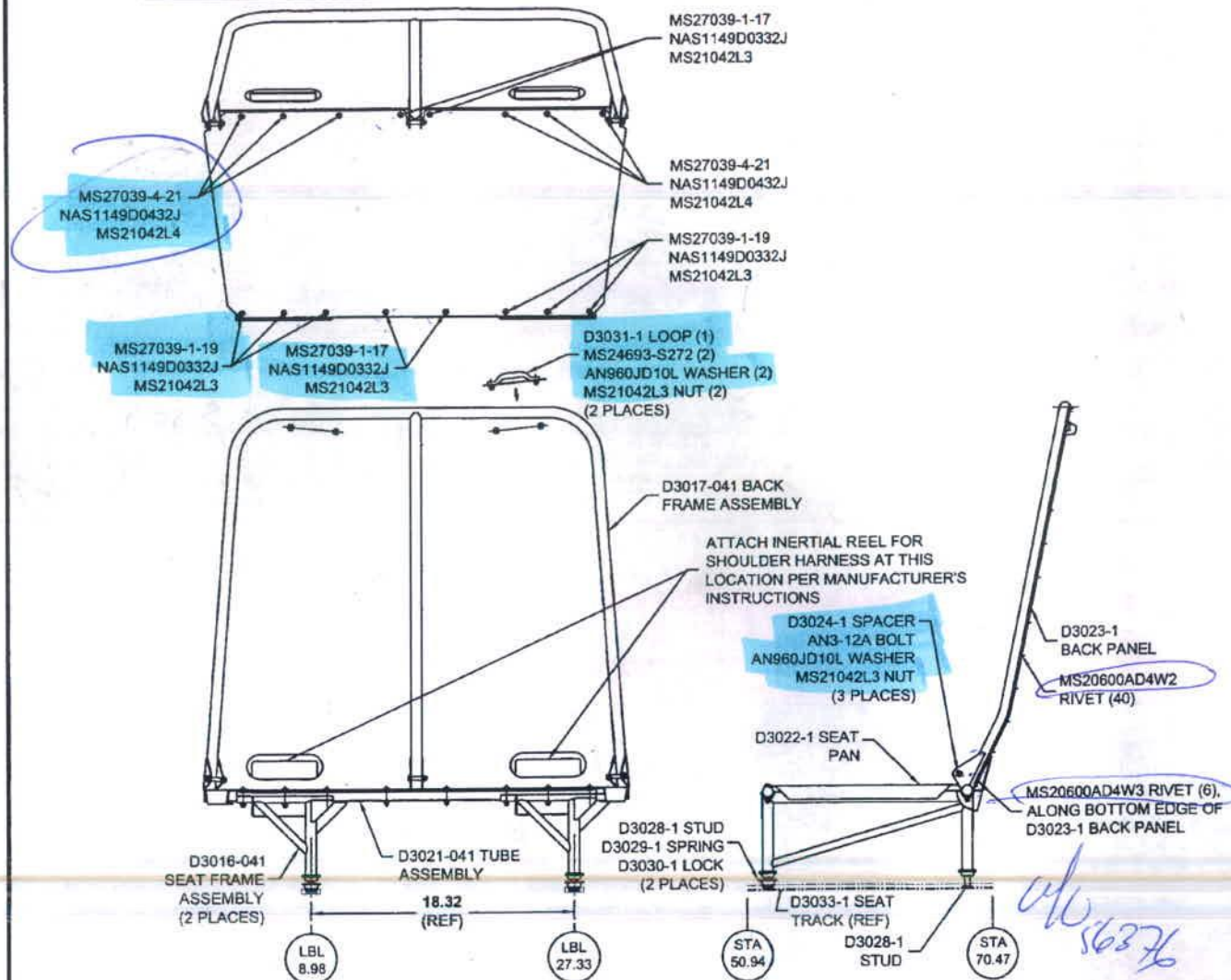
**NOTE:** Date & initial all entries



**CHANGE:**

THE FOLLOWING WEIGHT AND BALANCE INFORMATION IS FOR THE D350-689-011 DUAL HIGH BACK SEAT AT CHANGE 003 (OR LATER) AND THE D350-689-021 DUAL HIGH BACK SEAT AT CHANGE 002 (OR LATER).

Installation	Weight	LATERAL		LONGITUDINAL	
		Arm	Moment	Arm	Moment
D350-689-011	27.6 lb	-18.2 in	-502 in-lb	60.7 in	1675 in-lb
Dual High Back Seat Installation	12.5 kg	-0.46 m	-5.8 m-k-g	1.54 m	19.3 m-k-g
D350-689-021 Dual High Back Seat Installation, LH Fwd Position	29.2 lb	-18.2 in	-531 in-lb	60.7 in	1772 in-lb
	13.2 kg	-0.46 m	-6.1 m-k-g	1.54 m	20.3 m-k-g
D350-689-021 Dual High Back Seat Installation, LH Aft Position	29.2 lb	-18.2 in	-531 in-lb	64.7 in	1889 in-lb
	13.2 kg	-0.46 m	-6.1 m-k-g	1.64 m	21.6 m-k-g

**REF FIGURE 6 (IIN-350-689)**

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-Q-01

**APPROVED**

BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: 10.01.21  
CERT. NO.: SH02-33  
ISSUE NO.: 1

DESIGN	<i>[Signature]</i>
DRAWN	<i>[Signature]</i>
CHECKED	<i>[Signature]</i>
MFG. APPR.	N/A
APPROVED	<i>[Signature]</i>
DE APPR.	<i>[Signature]</i>
DATE	10.01.21

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. A  
DSI 9498 SHEET 2 OF 2  
TITLE SCALE  
SEAT REINF; IIN & ICA UPDATE NTS

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~~MS21042L4 - M113422 6x~~

~~NAS1149D0432J - M112550 6x~~

~~NAS1149D0330J - M112794 (20x)~~

~~MS21042L3 - M112385 20x~~

~~MS27039-4-21 - M114055 6x~~

~~MS27039-1-17 - M11540 4x~~

~~MS27039-1-19 - M10089 6x~~

~~MS24693S272 - M111548 4x~~

AN3-12A

D30241

- M112720

- B43394

(3x)

3x



# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D350-689 REV. A  
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D350-689 REV 0

REF TCCA STC: SH02-33

REF FAA STC: SR01620NY

REF EASA STC: EASA.IM.R.S.01453

REF BRAZILIAN STC: 2005S03-09

## PURPOSE:

TO PROVIDE REWORK INSTRUCTIONS TO INSTALL DSI-9495-011 REINFORCED BACK FRAME KIT. THESE INSTRUCTIONS ARE APPLICABLE TO D350-689-011 AT CHANGE 002, D350-689-021 AT CHANGE 001, D350-689-041 AT CHANGE 001 AND D350-689-043 AT CHANGE 001 OR EARLIER CHANGE NUMBER.

## CHANGE:

REPLACE EXISTING BACK ASSEMBLY WITH DSI 9495-011 REINFORCED BACK FRAME KIT.

## PARTS LIST:

Qty -011	Part Number	Description
X	DSI-9495-011	REINFORCED BACK FRAME KIT
1	D3017-041	BACK FRAME ASSEMBLY
1	D3023-1	BACK PANEL
2	NAS1149D0332J	WASHER (OR AN960JD10L)
6	NAS1149D0432J	WASHER (OR AN960JD416)
40	MS20600AD4W2	RIVET
6	MS20600AD4W3	RIVET (REF DSI 9349)
2	MS27039-1-17	SCREW
6	MS27039-4-21	SCREW
2	MS21042L3	NUT (OR MS21042-3)
6	MS21042L4	NUT (OR MS21042-4)

REFERENCE ONLY

## INSTRUCTIONS:

1. REMOVE LAP BELT AND HARNESS (IF APPLICABLE).
2. REMOVE EXISTING D3017-041 BACK FRAME ASSY.
3. INSTALL PROVIDED D3017-041 BACK FRAME ASSEMBLY WITH ATTACHED PARTS USING ORIGINAL HARDWARE ON EITHER SIDE OF THE CENTER TUBE.
4. TRANSFER Ø0.257" HOLES (SEE SHEET 2 OF THIS SERVICE INSTRUCTION FOR REFERENCE, 6 PLACES) USING THE BACK FRAME ASSEMBLY AS A TEMPLATE TO OPEN UP THE HOLES IN THE SEAT FRAME ASSEMBLY.
5. REMOVE NEW BACK FRAME ASSEMBLY.
6. REMOVE BURRS AND SHARP EDGES. TOUCH UP PER ICA-D350-689 CHAPTER 5.2 SECTION 8 AS REQUIRED.
7. REINSTALL PROVIDED BACK FRAME ASSEMBLY WITH ATTACHED BACK PANEL USING THE HARDWARE PROVIDED PER FIGURE 1 (SHEET 2).
8. REMOVE FROM OLD BACK ASSEMBLY:  
D3031-1 LOOP AND HARDWARE (2 PLACES) AND TRANSFER TO NEW BACK ASSEMBLY.  
D3024-1 SPACER AND HARDWARE (3 PLACES) AND TRANSFER TO NEW BACK ASSEMBLY.
9. INSTALL LAP BELT AND HARNESS (IF APPLICABLE).
10. THE PARTS LIST AND WEIGHT & BALANCE SHOULD BE UPDATED PER DSI 9498.

(INSPECT REMOVED HARDWARE FOR WEAR AND REPLACE AS REQUIRED)

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: 10.01.13

CERT. NO.: SH02-33

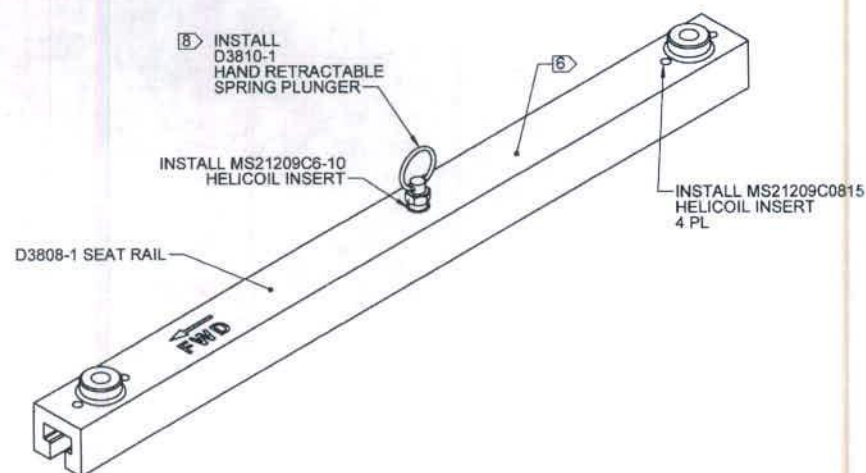
ISSUE NO.: 1

A	NEW ISSUE.	JPH	10.01.13
REV.	DESCRIPTION	BY	DATE
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DRAWN	<i>[Signature]</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9495	SHEET 1 OF 2
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	INSTL OF REINFORCED BACK FRAME NTS	
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REFERENCE ONLY



**D3808-041 SEAT RAIL ASSEMBLY**

QTY -041	P/N	DESCRIPTION
X	D3808-041	SEAT RAIL ASSY
1	D3808-1	SEAT RAIL
1	D3810-1	HAND RETRACTABLE SPRING PLUNGER
1	MS21209C6-10	HELI-COIL, SCREW LOCKING (RED)
4	MS21209C0815	HELI-COIL, SCREW LOCKING (RED)

**D3808-041 NOTES:**

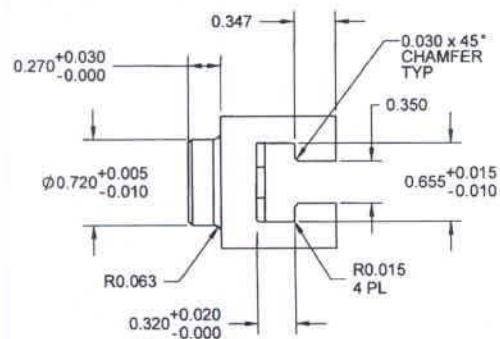
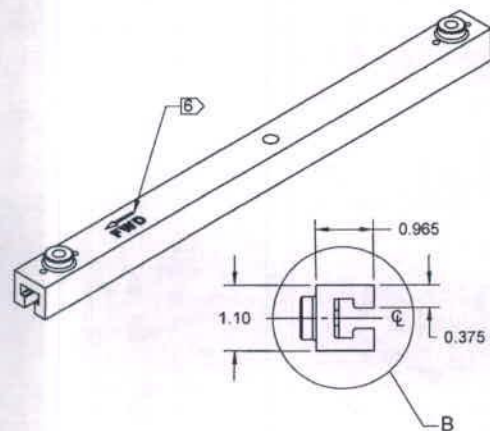
- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N D3808-041 USING FINE POINT PERMANENT INK MARKER AS SHOWN
- 7) WEIGHT: 0.80 lbs
- 8) INSTALL D3810-1 INTO D3808-1 ONLY UNTIL NO THREADS VISIBLE ON D3810-1

RELEASED  
08-09-2017

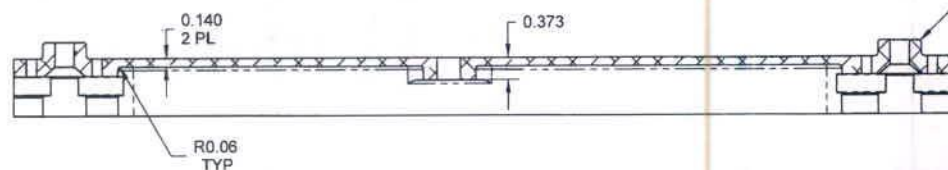
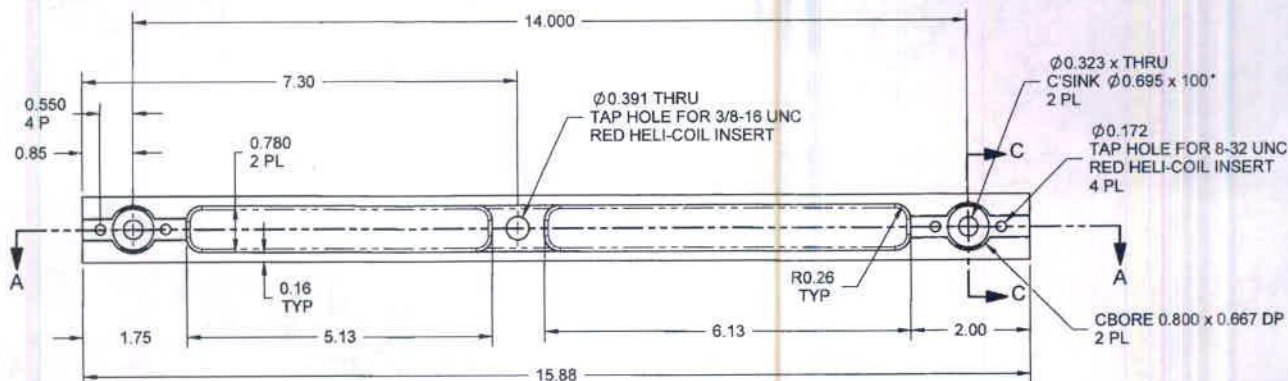
A	NEW ISSUE	RF	08.08.08
REV	DESCRIPTION	BY	DATE
DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D3808	SHEET 1 OF 2
APPROVED		TITLE	SCALE
DE APPR.		SEAT RAIL ASSEMBLY	NTS
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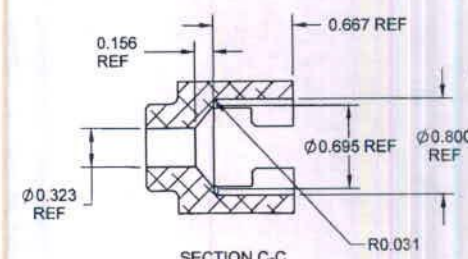




DETAIL VIEW B



SECTION A-A



SECTION C-C

D3808-1 SEAT RAIL

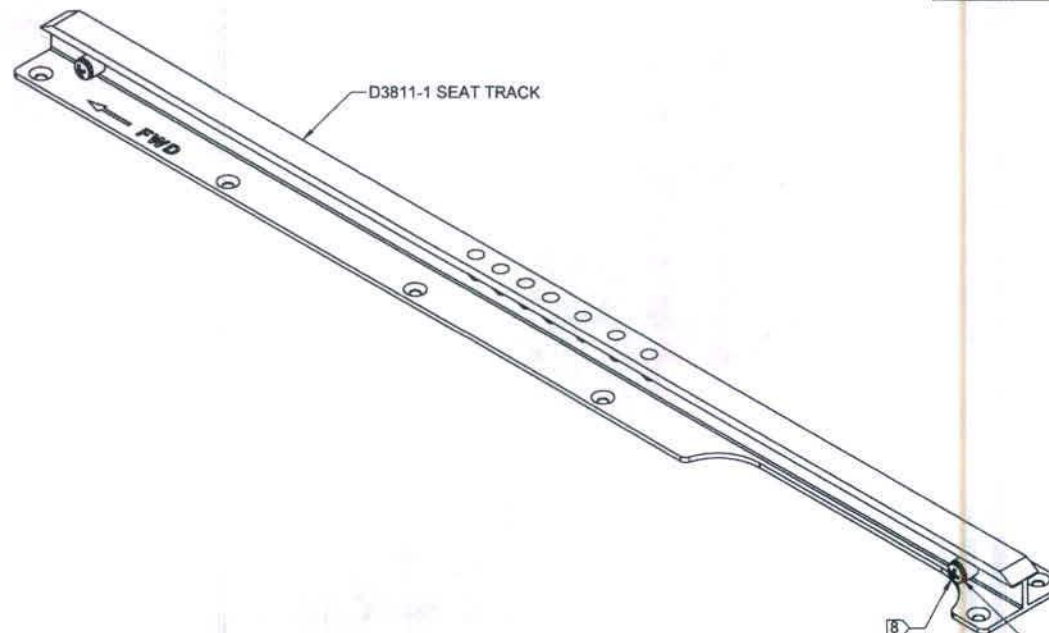
RELEASED  
08-13-2014

NOTES:

- 1) MATERIAL: 6061-T6 (OR T651/T6510/T6511/T62) ALUMINUM BAR PER AMS-QQ-A-200/8 (OR AMS 4160) OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116) (REF. DART SPEC. M6061T6B)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: ENGRAVE ARROW & FWD AS SHOWN USING 0.30 HIGH LETTERS TO MAX DEPTH OF 0.005
- 7) WEIGHT: 0.768 lbs

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MFG. APPR.		D3808	SHEET 2 OF 2
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**D3811-041 SEAT TRACK ASSEMBLY**

**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART ASSEMBLY P/N D3811-041 & B/N USING FINE POINT PERMANENT INK MARKER
- 7) WEIGHT: 0.76 lbs
- 8) TORQUE FASTENERS TO 20-25 in-lbs

QTY -041	P/N	DESCRIPTION
X	D3811-041	SEAT TRACK ASSEMBLY
1	D3811-1	SEAT TRACK
4	D3811-3	BUSHING
2	MS21042L3	NUT
2	MS27039-1-15	SCREW

A	NEW ISSUE	RF	08.08.18
REV.	DESCRIPTION	BY	DATE
DESIGN	RF		
DRAWN	RF		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	08.08.18		

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO.  
**D3811**

REV. A  
SHEET 1 OF 3

TITLE  
**SEAT TRACK ASSEMBLY**

SCALE  
NTS

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08-08-18

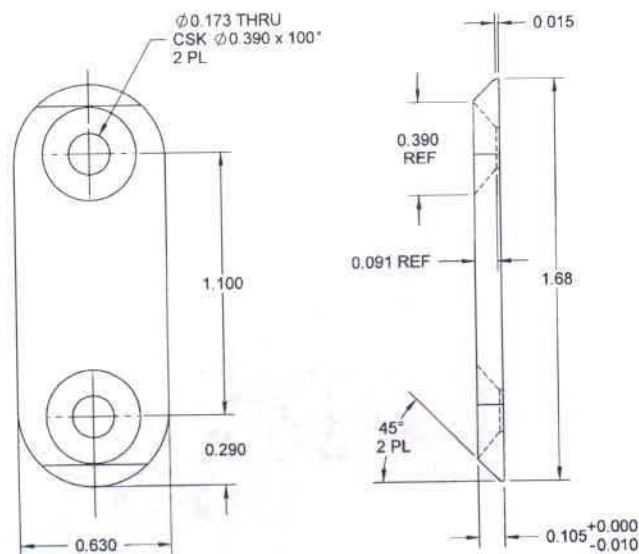












**D3809-1 SLIDING BLOCK**  
SCALE 2X

**RELEASED**  
08-07-24

**NOTES:**

- 1) MATERIAL: BLACK DELRIN II 150E OR ACETRON GP ACETAL SHEET OR BAR (REF. DART SPEC. M-DELIN-S OR M-DELIN-B)
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.004 lbs

A	NEW ISSUE	RF	08.07.24
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	RF	DRAWING NO.	REV. A
MFG. APPR.	RF	D3809	SHEET 1 OF 1
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DE APPR.	RF	SLIDING BLOCK	NTS
DATE	08.07.24	<small>COPYRIGHT © 2008 BY DART AEROSPACE LTD THIS DOCUMENT IS UNCLASSIFIED AND IS SUBJECT TO THE CANADIAN PATENT ACT NOT TO BE USED FOR ANY PURPOSES OR COMMUNICATIONS TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	



# Work Order ID 56210

February 17, 2010 3:47:53 PM



Page 1

Item ID: D350-689-011

Revision ID:

Item Name: Dual High Back Seat

Start Date: 2/16/10 Start Qty: 2.00

Required Date: 2/26/10 Req'd Qty: 2.00

Reference:

Approvals: Process Plan:

QC:

Date:

Date:

Tooling:

SPC (Y/N):

Date:

Date:

Run Start

Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

DSI 9498

A

IIN-D350-689

A

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels per PPP D350-689-011 CHG003

110

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

Pull from stock:

1 x D350-689-011 B ~~435H~~

1 x D350-689-011 B ~~HAP~~

D350-689-021 44405

.083





**Work Order ID 56210**

February 17, 2010 3:47:54 PM

Page 2

Item ID: D350-689-011

Revision ID:

Item Name: Dual High Back Seat

Start Date: 2/16/10 Start Qty: 2.00

Required Date: 2/26/10 Req'd Qty: 2.00

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

150



Large Fab

Large Fab

Memo

Modify D3017-041 back frame  
D3017-5 tube to be made from  
M4130N-T0750W083 B M113812 for  
per ECN10-504

Tube assembly  
≠ Back frame

EL 10-2-18

P10 →

160



QC

Quality Control

QC5- Inspect part completeness to step on W/O

Memo

8 QC9 inspect weld.

0.00

0.00

Done on w/o 56376

BE

→ BE 10/02/22 (H)

165



Small Fab

Small Fab

Memo

disassemble if applicable

0.00

0.00





**Work Order ID 56210**

March 4, 2010 2:41:23 PM



Page 3

Item ID: D350-689-011

Accept



Setup Start



Revision ID:

Stop



Item Name: Dual High Back Seat

Start Date: 2/16/10 Start Qty: 2.00



Cust Item ID:

Required Date: 2/26/10 Req'd Qty: 2.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170 		0.00							
Powdercoat	Memo	0.00							
Powder Coating	repowder coat if applicable								
180 	QC3- Inspect Part Finish	0.00							
QC	Memo	0.00							
Quality Control									
190 		0.00							
Small Fab	Memo	0.00							
Small Fab	re-assemble if applicable								



**Work Order ID 56210**

Page 4

March 4, 2010 2:41:23 PM

Item ID: D350-689-011

Accept



Setup Start



Revision ID:

Stop



Item Name: Dual High Back Seat

Start Date: 2/16/10

Start Qty: 2.00



Cust Item ID:

Required Date: 2/26/10

Req'd Qty: 2.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

200

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

210

0.00



Packaging

Memo

0.00

Packaging

RE-PACKAGE PER PPP  
USING NEW B/N @ CHG 003  
ADD DSI 9498 TO PAPERWORK

215

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control





**Work Order ID 56210**

March 4, 2010 2:41:24 PM



Page 5

Item ID: D350-689-011

Accept



Setup Start



Revision ID:

Stop



Item Name: Dual High Back Seat

Start Date: 2/16/10 Start Qty: 2.00

Required Date: 2/26/10 Req'd Qty: 2.00



Cust Item ID:

Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

220

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control





Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-689-011 PAR #: \_\_\_\_\_ Fault Category: Large Error NCR: Yes No DQA: 7 Date: 10-03-01  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR: <u>56210</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10/02/02	# 150	During inspection it was found that the employee <del>scraped</del> scraped the D3021-041 tube when he was not supposed to. He replaced it with 0.75" x 0.083" wall <del>thinking</del> it was thinking it was	<u>RS/ML2</u>	- See Attached E-mails - Part accepted by Eng disposition.	N/A	<u>10-03-01</u>	<u>RS/ML2</u>	<u>10-03-01</u>
		He came as D3017-5. ALSO when making the replacement D3017-5 tube the same employee drilled all 8 holes @ 0.257. two holes should be at 0.191" (center holes).	<u>RS/ML2</u>					
		R/L Lack of Attention to details.	<u>RS/ML2</u>					

NOTE: Date & initial all entries



# Picklist Print

February 17, 2010 3:47:53 PM

Page 1  
1

Work Order ID: 56210

Parent Item: D350-689-011

Parent Item Name: Dual High Back Seat

Comments: IPP Rev:B 03.05.09 Reformat; Modify Step 1 KJ/RF IPP Rev:C chg003 per  
DSI 9498 DD 10.02.11 verified by:JLM

Start Date: 2/16/10

Required Date: 2/26/10

Start Qty: 2.00

Required Qty: 2.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D350-689-011		Manufactured	No				Each	2.0000	2.0000			

Dual High Back Seat

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
FG	2	
43511	1	
50177	1	
	f	
	23.8300	1.5000

10-02-25

M4130NT0.750W.083

Purchased

No



4130 RD Tube .750 x.083W



EL 10-8-18

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
MAT	23.83	
113812	23.83	

4.75

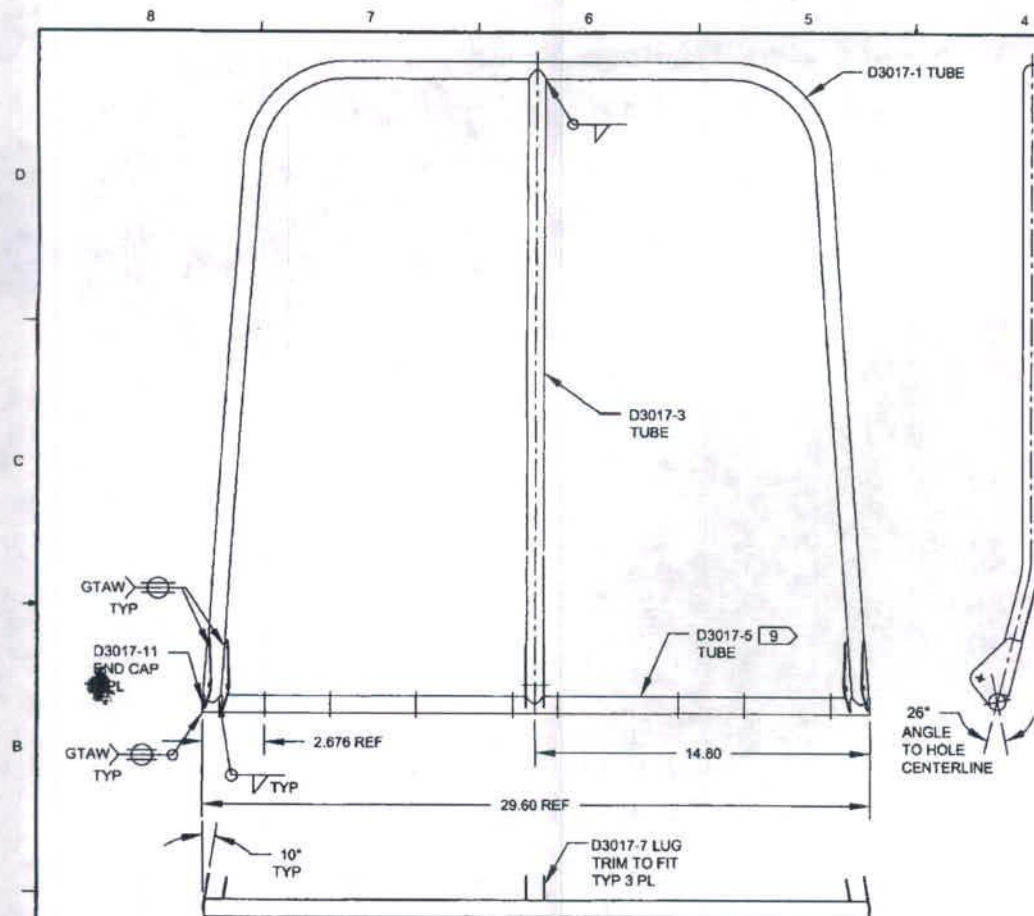
Cap. D3017-11

52583

4







ITEM No.	QTY	PART NUMBER	DESCRIPTION
1	X	D3017-041	BACK FRAME ASSEMBLY
2	1	D3017-1	TUBE
3	1	D3017-3	TUBE
4	1	D3017-5	TUBE
5	3	D3017-7	LUG
6	2	D3017-11	END CAP

DRILL Ø0.128 HOLES TO LINE UP WITH D3023-1 BACK PANEL

26°  
ANGLE TO HOLE CENTERLINE

### D3017-041 BACK FRAME ASSEMBLY

#### NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: POWDER COAT GREY SANDTEX (4.3.5.6) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3017-041" USING FINE POINT PERMANENT INK MARKER
- 7) WEIGHT: 4.50 lbs
- 8) WELD PER DART QSI 004
- 9) ROTATE SO THAT PILOT HOLES ARE ANGLED AS SHOWN IN END VIEW.

RELEASED  
2010-02-02

B	REFORMAT DWG, -5 TUBE WALL THKNS REV'D (A8-3) SHEET 3 & 4 ADDED TO CLARIFY DRAWING. RADIUS CHANGED FROM R4.00 TO R3.75 (B4-2, B2-2). HOLE SIZE CHANGED FROM Ø0.191 TO Ø0.257 (C6-3, C3-3)	JPH	10.01.13
A	NEW ISSUE	CP	01.05.18
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.01.13		

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. B  
D3017 SHEET 1 OF 4  
TITLE SCALE  
BACK FRAME ASSEMBLY NTS

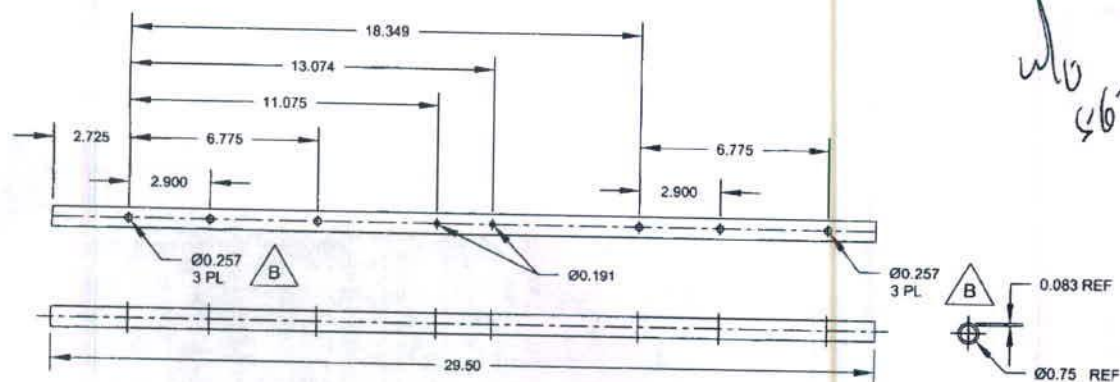
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D3017-5 TUBE

RELEASED  
2010-02-02  
MP

NOTES:

- 1) MATERIAL: AISI 4130N TUBE, Ø0.75 DIA x 0.083 WALL (M4130N-T0750W083)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART OSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.89 lbs

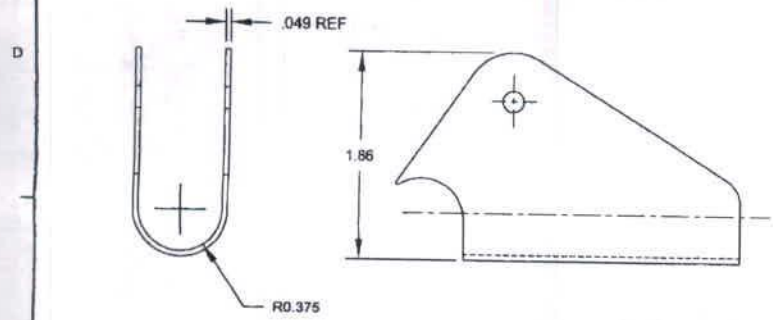


DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D3017	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NTS
DATE	10.01.13	<small>COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.</small>	

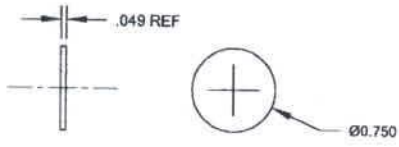




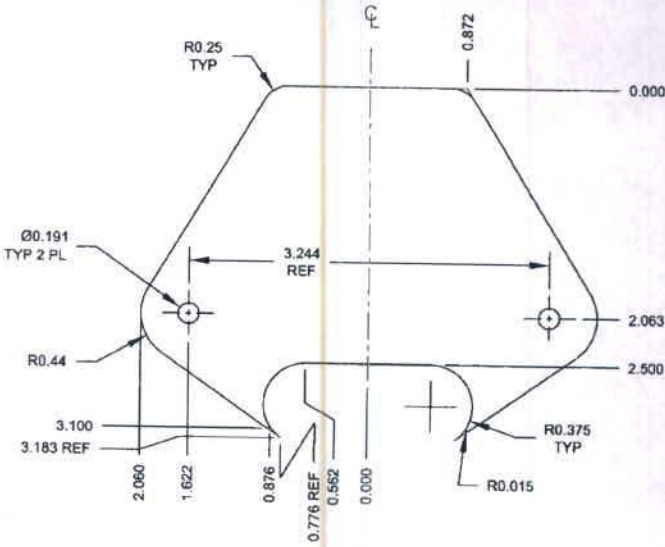
8 7 6 5 4 3 2 1



**D3017-7 LUG**  
BENDING DETAIL  
MAKE FROM D3017-7F



**D3017-11 END CAP**



**D3017-7F FLAT PATTERN**  
PART IS SYMMETRIC  
ABOUT CENTERLINE

*W/O  
S6210*

**RELEASED**  
2010-02-02  
*MP*

- NOTES:**
- 1) MATERIAL: AISI 4130N SHEET, 18 GAUGE (M4130N-S049)
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: NONE
  - 7) WEIGHT: -7: 0.12 lbs; -11: 0.01 lbs

DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D3017	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BACK FRAME ASSEMBLY	NTS
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8 7 6 5 4 3 2 1





**L Lacelle**

**From:** Juan Hurtado [jhurtado@dartaero.com]  
**Sent:** February 22, 2010 12:59 PM  
**To:** 'Linda Lacelle'  
**Cc:** mpetsche@dartaero.com  
**Subject:** RE: 350 Dual High Back Seat

Hi Linda,

We will accept the deviation for this seat.

Mike, who can sign off the deviation? Should we forward it to Chris or can I sign it and have this email attached to the W.O?

**Juan Hurtado**  
**Design Engineer**

**DART aerospace Ltd.**

Tel: 613-632-5200 Ext. 229

Fax: 613-632-9311

E-mail: [jhurtado@dartaero.com](mailto:jhurtado@dartaero.com)

Web: [www.dartaero.com](http://www.dartaero.com)



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---

**From:** Mike Petsche [mailto:mpetsche@dartaero.com]  
**Sent:** February 22, 2010 12:50 PM  
**To:** Juan Hurtado  
**Subject:** Re: 350 Dual High Back Seat

Ok go for it

Sent from my BlackBerry

---

**From:** "Juan Hurtado" <jhurtado@dartaero.com>  
**Date:** Mon, 22 Feb 2010 12:28:32 -0500  
**To:** <mpetsche@dartaero.com>  
**Subject:** RE: 350 Dual High Back Seat

The only visible change would be the bigger line of fasteners at the front. There isn't really anything to be fixed. The only problem would be weight. Fit and function have not changed. I believe we could sign off a deviation for this one if weight is not an issue.

**Juan Hurtado**  
**Design Engineer**

**DART aerospace Ltd.**

Tel: 613-632-5200 Ext. 229

Fax: 613-632-9311

E-mail: [jhurtado@dartaero.com](mailto:jhurtado@dartaero.com)

2/22/10





Web: [www.dartaero.com](http://www.dartaero.com)



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**From:** Mike Petsche [mailto:mpetsche@dartaero.com]

**Sent:** February 22, 2010 12:17 PM

**To:** Juan Hurtado

**Subject:** Re: 350 Dual High Back Seat

My preference would be to make it correctly. I'm not not fully visualizing the problem standing here. I don't care about the weight. In your opinion is it fixable?

Sent from my BlackBerry

---

**From:** "Juan Hurtado" <jhurtado@dartaero.com>

**Date:** Mon, 22 Feb 2010 11:31:25 -0500

**To:** <mpetsche@dartaero.com>

**Cc:** 'David Shepherd' <dshepherd@dartaero.com>; 'Linda Lacelle' <llacelle@dartaero.com>

**Subject:** RE: 350 Dual High Back Seat

To make it correctly as per drawing would mean basically scrapping this one and manufacturing a new seat.

**Juan Hurtado**  
**Design Engineer**

**DART** aerospace Ltd.

Tel: 613-632-5200 Ext. 229

Fax: 613-632-9311

E-mail: [jhurtado@dartaero.com](mailto:jhurtado@dartaero.com)

Web: [www.dartaero.com](http://www.dartaero.com)



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**From:** Mike Petsche [mailto:mpetsche@dartaero.com]

**Sent:** February 22, 2010 11:26 AM

**To:** Juan Hurtado

**Cc:** David Shepherd; Linda Lacelle

**Subject:** Re: 350 Dual High Back Seat

And going back and making it correctly is not an option?

Sent from my BlackBerry

---

**From:** "Juan Hurtado" <jhurtado@dartaero.com>

**Date:** Mon, 22 Feb 2010 11:14:15 -0500

**To:** Petsche, Mike <mpetsche@dartaero.com>

**Cc:** 'David Shepherd' <dshepherd@dartaero.com>; 'L. Lacelle' <llacelle@dartaero.com>





**Subject:** RE: 350 Dual High Back Seat

Good morning Mike,

Production has completed the rework on (1) Dual High Back Seat. Unfortunately there are some deviations:

1. D3017-5 (Main Junction): All holes were drilled for 1/4" fasteners. The drawing calls out for (6) 1/4" holes and (2) No. 10s
2. D3021-1 (Fwd tube on seat saddle): It was also changed to .083 thickness and all the holes were drilled to 1/4"
3. Everything has been reworked to 1/4": The seat frame and the Seat Pan.

This means this seat would be 0.56 lbs heavier for this deviation (weight analysis includes fasteners). I believe this is not a big deal.

The alternative is to manufacture a new D3021-1 tube with the proper wall thickness of 0.049" but the fasteners would still have to be 1/4" since everything else has been drilled. (for a total weight increase of 0.1 lbs).

Please let me know what you think and how to proceed

Thanks,

**Juan Hurtado**  
**Design Engineer**

**DART** aerospace Ltd.

Tel: 613-632-5200 Ext. 229

Fax: 613-632-9311

E-mail: [jhurtado@dartaero.com](mailto:jhurtado@dartaero.com)

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**From:** L Lacelle [mailto:[llacelle@dartaero.com](mailto:llacelle@dartaero.com)]

**Sent:** February 22, 2010 7:53 AM

**To:** 'Juan Hurtado'

**Subject:** dual seat

Please come see me asap

Thank You,  
Linda Lacelle  
Production Manager  
Dart Aerospace Ltd

2/22/10





L Lacelle

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** February 25, 2010 2:14 PM  
**To:** 'L Lacelle'; mpetsche@dartaero.com; 'Juan Hurtado'  
**Subject:** RE: 350 Dual High Back Seat

Linda,

The deviations are acceptable ... frustrating, but acceptable.  
Any idea why the manufactured seat is so different from the drawings.  
It's like the guy who made it didn't even read the drawings.

David

---

**From:** L Lacelle [mailto:llacelle@dartaero.com]  
**Sent:** Thursday, February 25, 2010 12:01 PM  
**To:** mpetsche@dartaero.com; 'Juan Hurtado'  
**Cc:** 'David Shepherd'  
**Subject:** RE: 350 Dual High Back Seat  
**Importance:** High

I've been under the assumption that this was all good, now Eric D tells me the thing is still waiting eng approval. I've promised DHS that it would ship today, guess what, it's not. The one I've been following is a -021 seat...when can this get resolved????????  
LL

---

**From:** Mike Petsche [mailto:mpetsche@dartaero.com]  
**Sent:** February 22, 2010 11:26 AM  
**To:** Juan Hurtado  
**Cc:** David Shepherd; Linda Lacelle  
**Subject:** Re: 350 Dual High Back Seat

And going back and making it correctly is not an option?

Sent from my BlackBerry

---

**From:** "Juan Hurtado" <jhurtado@dartaero.com>  
**Date:** Mon, 22 Feb 2010 11:14:15 -0500  
**To:** Petsche, Mike <mpetsche@dartaero.com>  
**Cc:** 'David Shepherd' <dshepherd@dartaero.com>; 'L Lacelle' <llacelle@dartaero.com>  
**Subject:** RE: 350 Dual High Back Seat

Good morning Mike,

Production has completed the rework on (1) Dual High Back Seat. Unfortunately there are some deviations:

1. D3017-5 (Main Junction): All holes were drilled for 1/4" fasteners. The drawing calls out for (6) 1/4" holes and (2) No. 10s
2. D3021-1 (Fwd tube on seat saddle): It was also changed to .083 thickness and all the holes were drilled to 1/4"

2/25/10



3. Everything has been reworked to 1/4". The seat frame and the Seat Pan.

This means this seat would be 0.56 lbs heavier for this deviation (weight analysis includes fasteners). I believe this is not a big deal.

The alternative is to manufacture a new D3021-1 tube with the proper wall thickness of 0.049" but the fasteners would still have to be 1/4" since everything else has been drilled. (for a total weight increase of 0.1 lbs).

Please let me know what you think and how to proceed

Thanks,

**Juan Hurtado**  
**Design Engineer**

**DART** aerospace Ltd.

Tel: 613-632-5200 Ext. 229

Fax: 613-632-9311

E-mail: [jhurtado@dartaero.com](mailto:jhurtado@dartaero.com)

Web: [www.dartaero.com](http://www.dartaero.com)



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---

**From:** L Lacelle [mailto:[llacelle@dartaero.com](mailto:llacelle@dartaero.com)]

**Sent:** February 22, 2010 7:53 AM

**To:** 'Juan Hurtado'

**Subject:** dual seat

Please come see me asap

Thank You,  
Linda Lacelle  
Production Manager  
Dart Aerospace Ltd

No virus found in this incoming message.

Checked by AVG - [www.avg.com](http://www.avg.com)

Version: 8.5.435 / Virus Database: 271.1.1/2709 - Release Date: 02/25/10 07:34:00





February 22, 2010 10:03:04 AM

56376



Page 2

Item ID: D350-689-021

Revision ID:

Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Accept



Setup Start

Stop



Cust Item ID:

Customer:

Approvals: Process Plan:

QC:

Date:

Date:

Tooling:

SPC (Y/N):

Date:

Date:

Run Start

Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

111



Large Fab

Large Fab

Memo

MODIFY D3017-041 BACK FRAME:  
D3017-5 TUBE TO BE MADE FROM M4130N-T750W083 B ~~100015~~ M100015  
PER ECN 10-504 DSI9498

0.00

EL 10-2-23

112



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

→ Sidel/23

Memo

0.00

QC9 inspect weld.  
Sidel/23

→

BE 10/02/23

113



Small Fab

Small Fab

Memo

RE-ASSEMBLE IF APPLICABLE

0.00

0.00

P10 →

PS 10/02/24 @





56376

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Chief Eng Prod Mgr	QC Inspector
	112.1	Re Powder coat all Parts grey Sander per Q32005 Start time 2:45pm Fin time 3:15pm Temp. 320°F	BR	10/02/23	(X1)		S 10/02/23
	112.2	→ Qc 3 inspect Powdercoat. M112588	BR	10-02-23	①		S 10/02/23
	113.1	QC 5 inspect reassembly.	S	10/02/24	②		S 10/02/23

Part No: D350-689-021 PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QAINCRWO RevE



# Work Order ID 56376

February 22, 2010 10:03:05 AM

Item ID: D350-689-021

Revision ID:

Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Approvals: Process Plan:

QC:

Date:

Date:

Tooling:

SPC (Y/N):

Date:

Date:

Setup Start

Stop

Run Start

Stop

Sequence ID/  
Work Center ID

114



Powdercoat

Powder Coating

Operation  
Description

MILZ 288

Memo

RE-POWDER COAT IF APPLICABLE

Set Up/  
Run Hours

0.00

0.00

Start time

Fin time

c Temp

0.00

0.00

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

8:30 AM

3:20 PM

9:00 AM

BR 10-02-04

D

Pto

115



QC

Quality Control

QC3- Inspect Part Finish

Memo

120



QC

Quality Control

QC4- 100% Inspect kits for completeness

0.00

ensure original parts are correctly at upblast chg.

Memo

0.00

002

02/25





Aerospace Ltd

# WORK ORDER CHANGES

WIO: 56376

## PROCEDURE CHANGE

DATE	STEP	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspe
	# 116 → Assemble Part to Broken Dwg.	8/3	10/10/05	1		S 10/10/05
	# 117 → QCS inspect Final Part	S	10/10/05	1		S 10/10/05
	118 Pick Kit.		10/10/05			S 10/10/05

Part No: D350-689-021 PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK ORDER NON-CONFORMANCE (NCR)

NCR:		Corrective Action			Sign & Date	Verification Section C	Approval Chief Eng	A OI
DATE	STEP	Description of NC Section A	Initial Chief Eng	Action Description Chief Eng				

NOTE: Date & initial all entries





**Work Order ID 56376**

February 22, 2010 10:03:05 AM

Item ID: D350-689-021

Revision ID:

Item Name: Dual High Back Seat, LH

Start Date: 2/22/10 Start Qty: 1.00

Required Date: 3/01/10 Req'd Qty: 1.00

Reference:

Approvals: Process Plan:

QC:

Sequence ID/  
Work Center ID

130



Packaging

Packaging

Operation  
Description

Packaging

**Memo**Identify and pack for shipping as per PPP D350-689-021 C11G002  
USING NEW B/N  
ADD DSI 9498 TO PAPERWORK d DSI 9495

Location: \_\_\_\_\_

PPP Rev: \_\_\_\_\_

QC21- Final Inspection - Work Order Release

140



QC

Quality Control

**Memo**

Accept



Cust Item ID:

Customer:



Date:

Date:

Tooling:

SPC (Y/N):

Date:

Date:

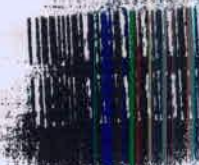
Set Up/  
Run Hours  
0.00

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Setup Start

Stop



Run Start

Stop



10/1/20 6

10/02/25 10

MF

10-2-25



# Picklist Print

February 22, 2010 10:03:03 AM

Work Order ID: 56376

Parent Item: D350-689-021

Parent Item Name: Dual High Back Seat, LH

Comments: IPP Rev:A 08-12-23 new issue DD verified by: LL 08.12.24 IPP  
Rev:B chg002 DD 10.02.12 verified by:JLM

Start Date: 2/22/10

Required Date: 3/01/10

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D350-689-021		Manufactured	No				Each	1.0000	1.0000			



Dual High Back Seat, LH

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
FG	1	
44405	1	

M4130NT0.750W.083

Purchased No



4130 RD Tube .750 x.083W

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
MAT	23.83	
113812	23.83	

1.5000



cap. D3017-11

MS20600AD4W2

MS20600AD4W3

~~MS20600AD4W3~~

52583

M111359

M106375

x 2

(40x)

(6x)

EL 10-2-23

EP510/02/24

EP510/02/24



